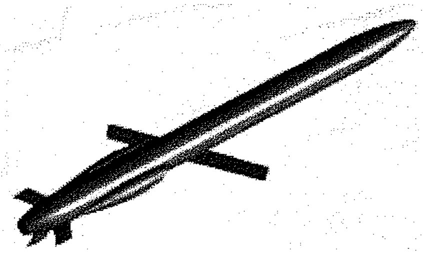
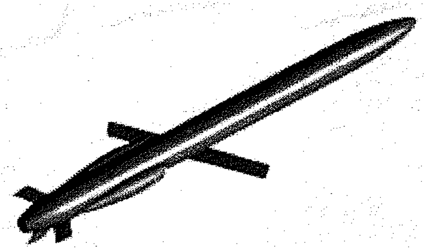
EXHIBIT 1



Air Vehicle Configuration

Ed Barocela

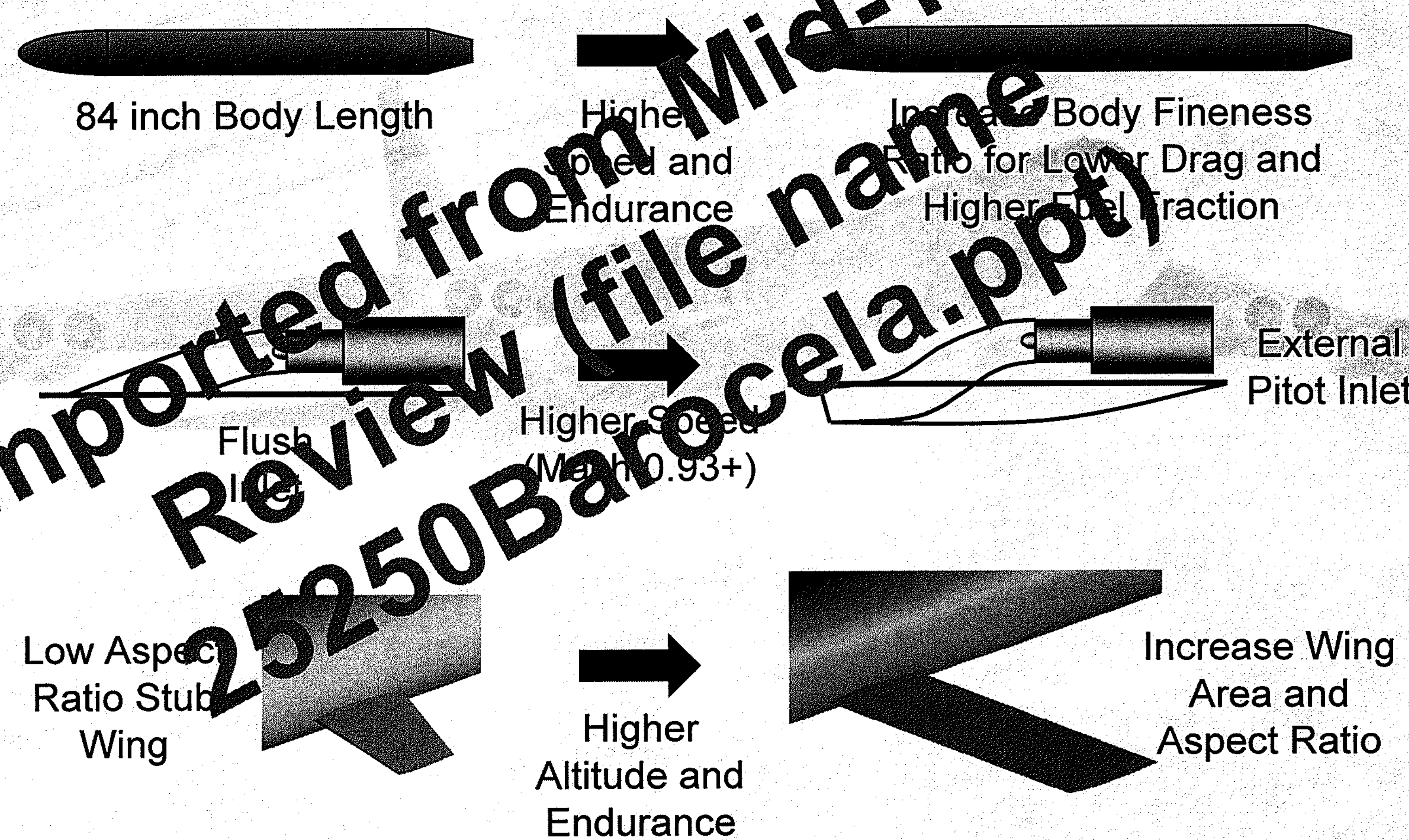


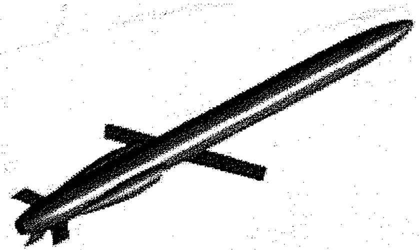
IRD Requirements

Requirement	Threshold	Objective
Operating Airspeeds	up to 0.93 M @ 35 kft	up to 0.95 M @ 40 kft
Endurance	45 min @ 35 kft	60 min @ 35 kft
Loiter (Jammer)	30 min On-Station	40 min On-Station
Min. Rate of Climb	1500 fpm @ 25 kft	*Not Specified*
Turn Maneuverability	2 G's up to 19 kft	3 G's up 25 kft

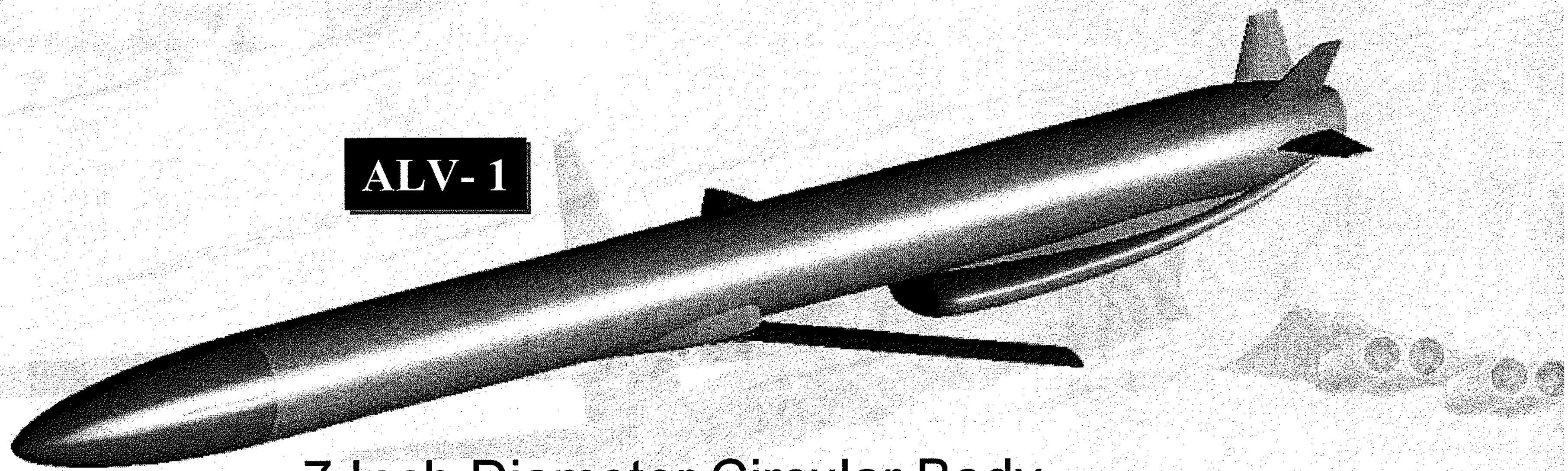
BOEING

Meeting New Requirements

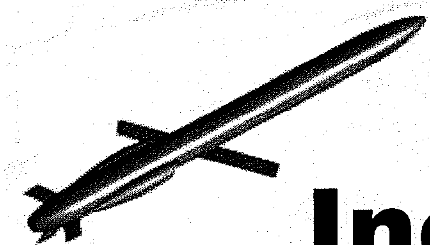




1st ALVIN Concept



- 7 Inch Diameter Circular Body
- 110 Inch Total Length
- Low Mounted Wing
  - Wing Fold Mechanism Outside of Fuel Tank
- High Aspect Ratio (AR = 8)
- External Pitot Inlet in Ventral Position

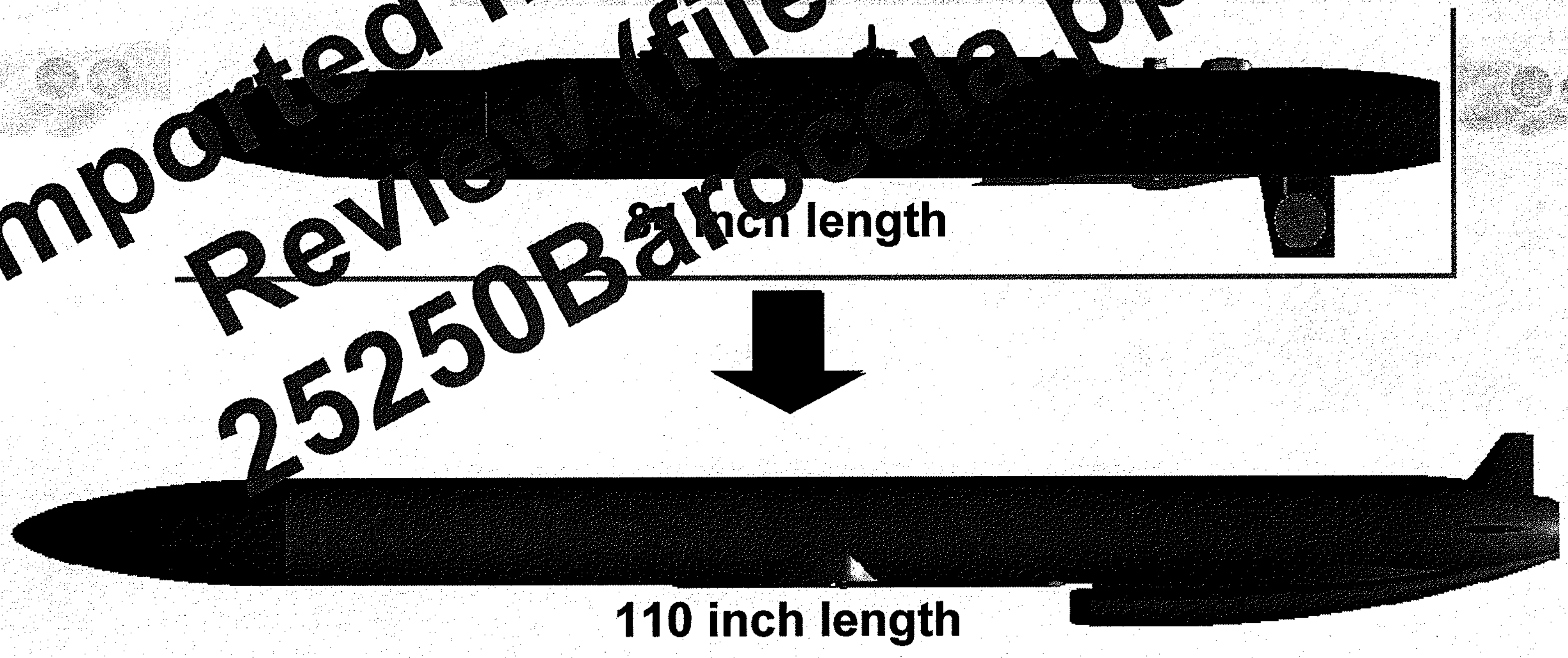


BOEING

Increase Fuel Fraction

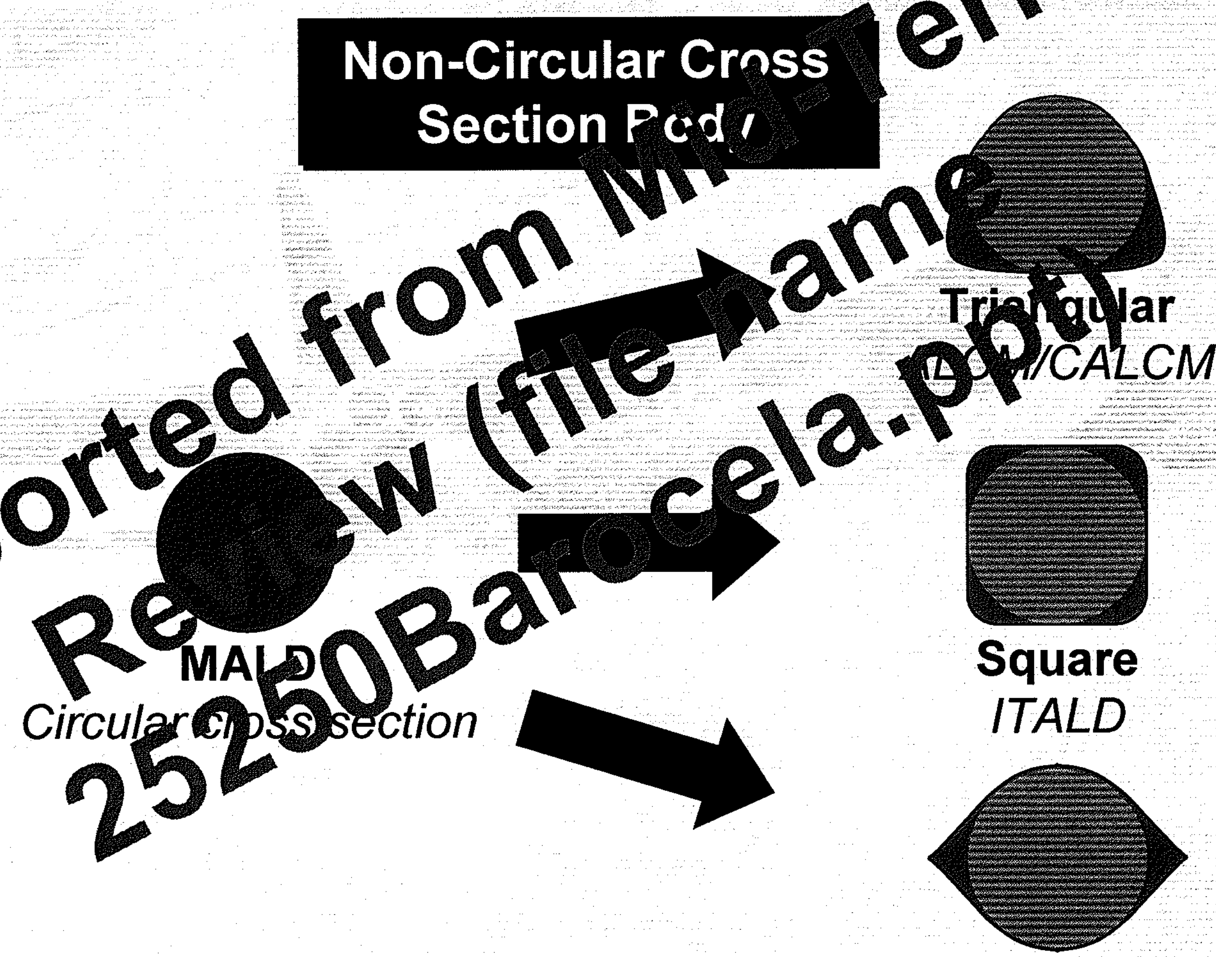
"Grow" the Missile

- Current MALD is volume-limited compared to new IRD requirements
  - Fuel tank occupies largest fraction of fuselage length, yet
  - Fuel Fraction ~20%



BOEING

Increase Fuel Fraction



BOEING

Increase Fuel Fraction

Re-Locate Engine Into External Nacelle

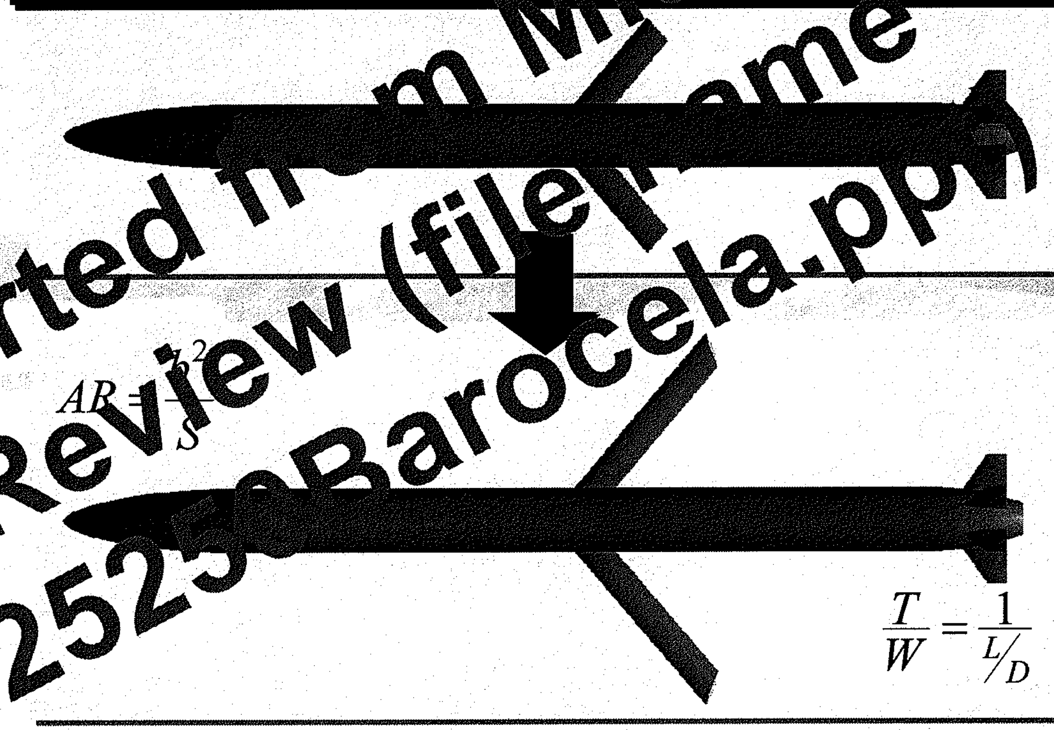
Raytheon *Streaker*

- Frees up fuselage internal volume for fuel
- External engine installations have been used on high speed drones (Mach No. > 0.9)

BOEING

Increase Aerodynamic Efficiency

Increase Wing Aspect Ratio



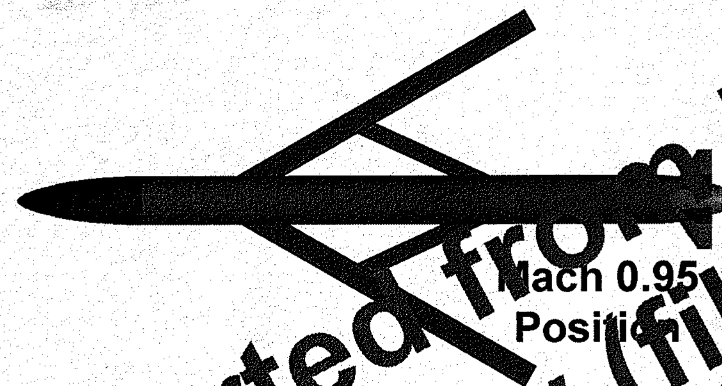
- Increase lift-to-drag ratio (L/D)
- Probably dictates high or low wing

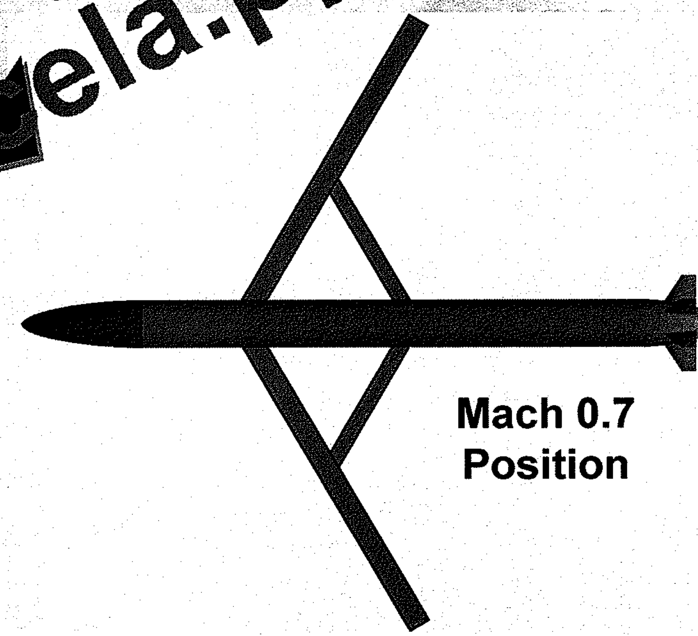
BOEING

Alternate Wing: Option 1

Dual Position Wing

- First position used for high speed dash (lowest drag)
- Second position used for long endurance cruise and loiter (highest L/D)





Small Diameter Bomb (SDB)

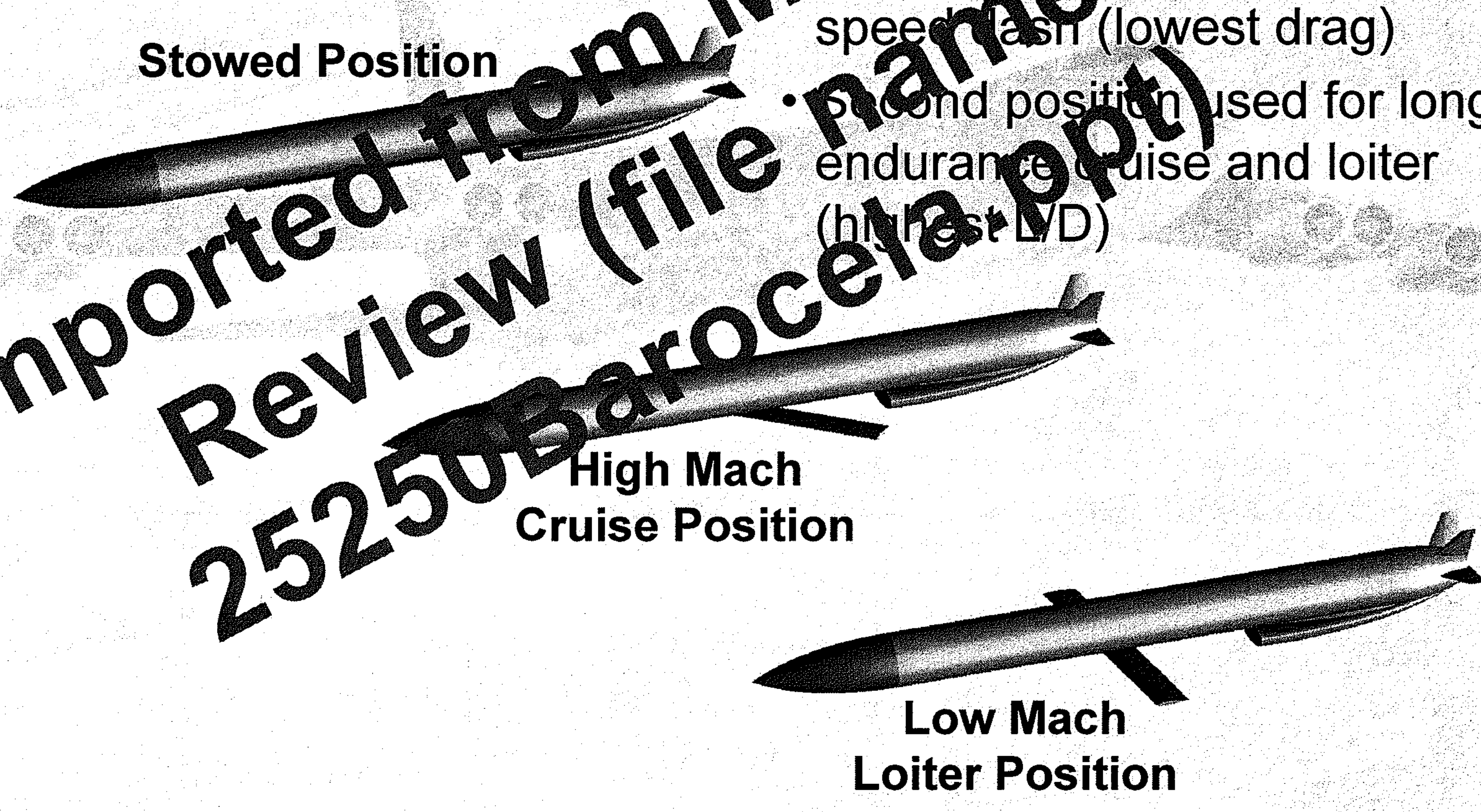
Folding wing design is candidate for MALD

BOEING

Alternate Wing: Option 2

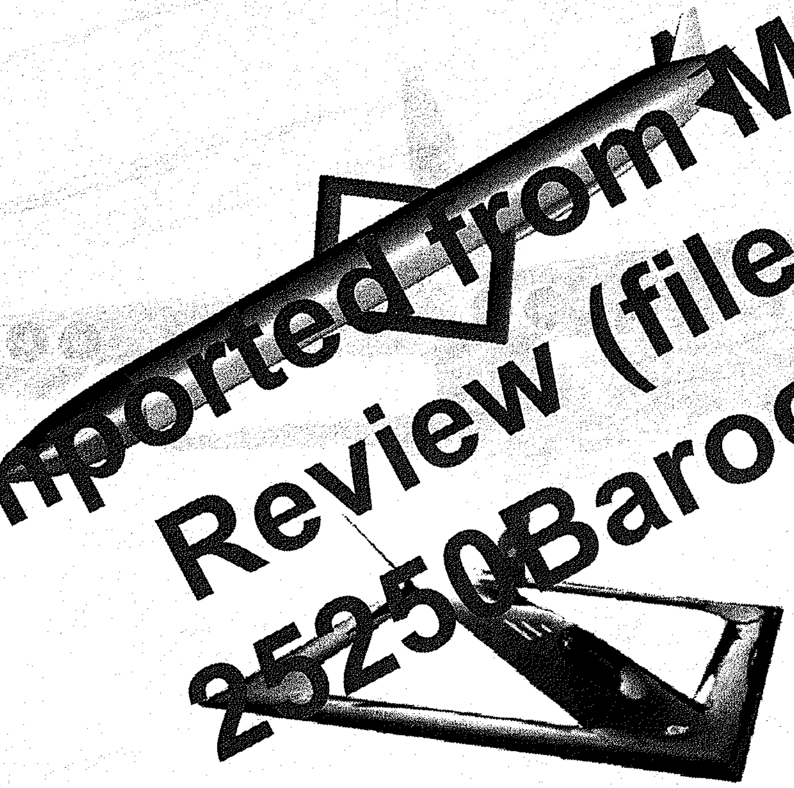
Oblique Wing

- First position used for high speed dash (lowest drag)
- Second position used for long endurance cruise and loiter (highest L/D)



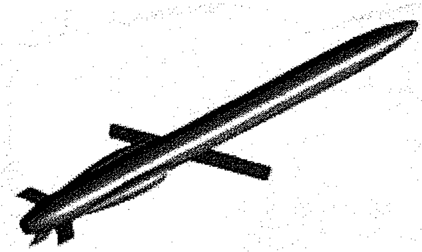
BOEING

Alternate Wing: Option 3

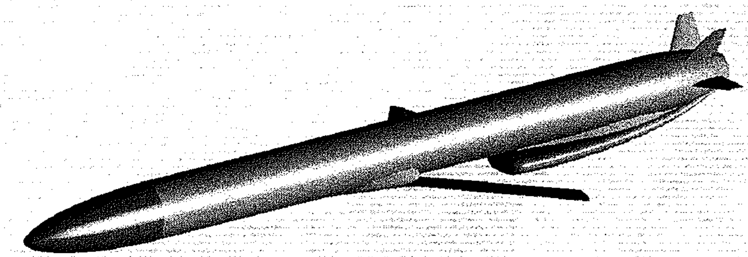


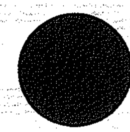
Diamond Wing

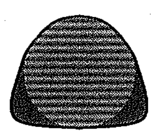
- Innovative wing shape tested for Sensorcraft
- Aerodynamically equivalent to high aspect ratio wing
- Span can be reduced to eliminate need to fold wing
- More wing sections available for antenna placement

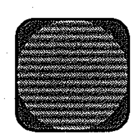


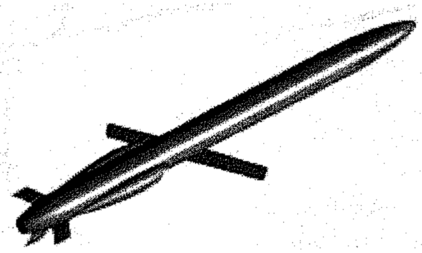
Alternative Configurations



ALV-1  Circular cross section body
AR 8 wing

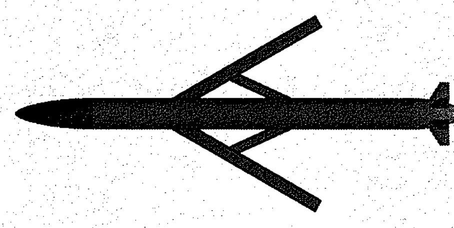
ALV-2  Triangular cross section body
AR 8 wing

ALV-3  Square cross section body
AR 8 wing



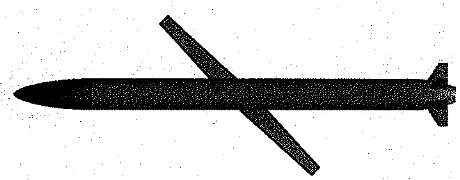
Alternative Configurations (cont.)

ALV-4

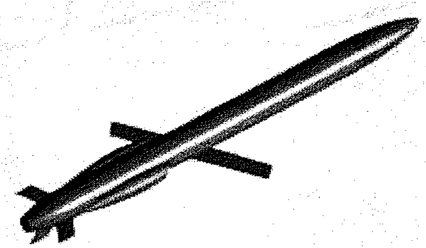


Circular cross section body
Diamondback wing

ALV-5

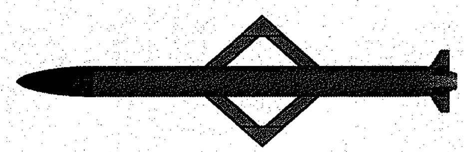


Circular cross section body
Oblique wing



Alternative Configurations (cont.)

ALV-6



Circular cross section body
Joined wing

ALV-7

Circular cross section body
AR 8 wing
External engine nacelle

BOEING

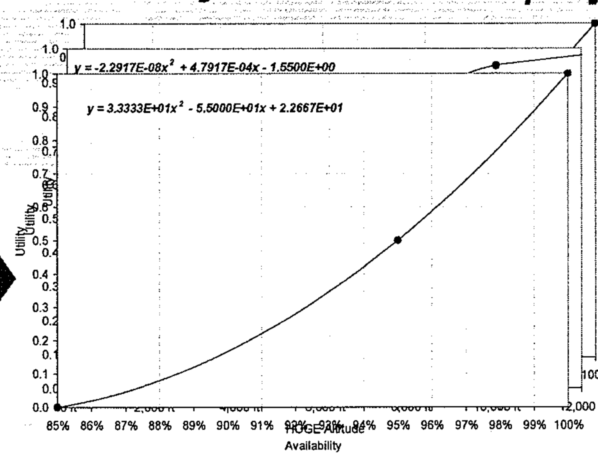
Trade Study Methodology

Total Score = $\sum W_i U_i$

Candidate Configuration Data

Cruise Speed
Endurance
Maneuverability
Weight
Fuel Fraction
Technical Risk

Utility Functions, u_i



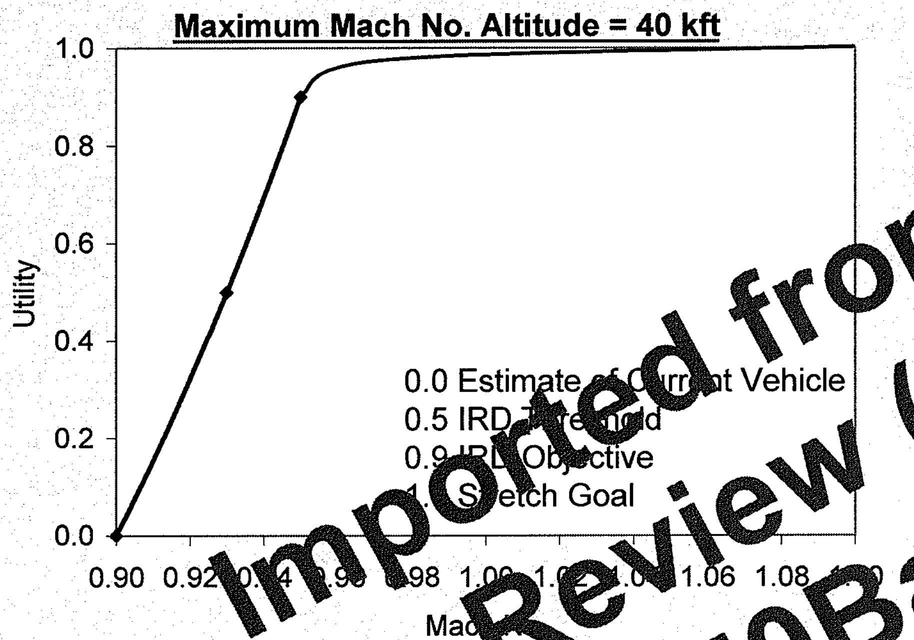
Weighting Factors, w_i

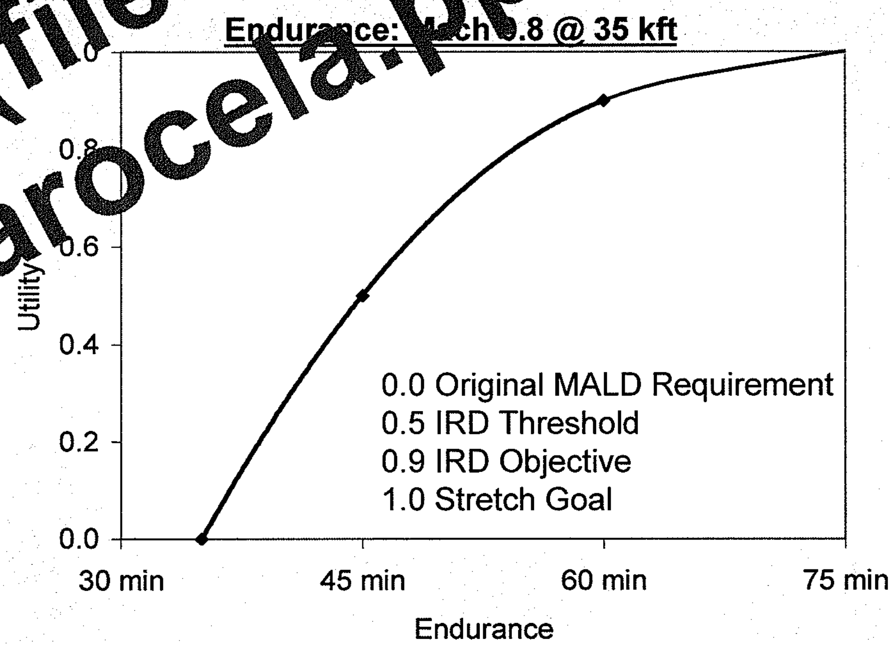
iSIGHT

Parameter Sensitivity

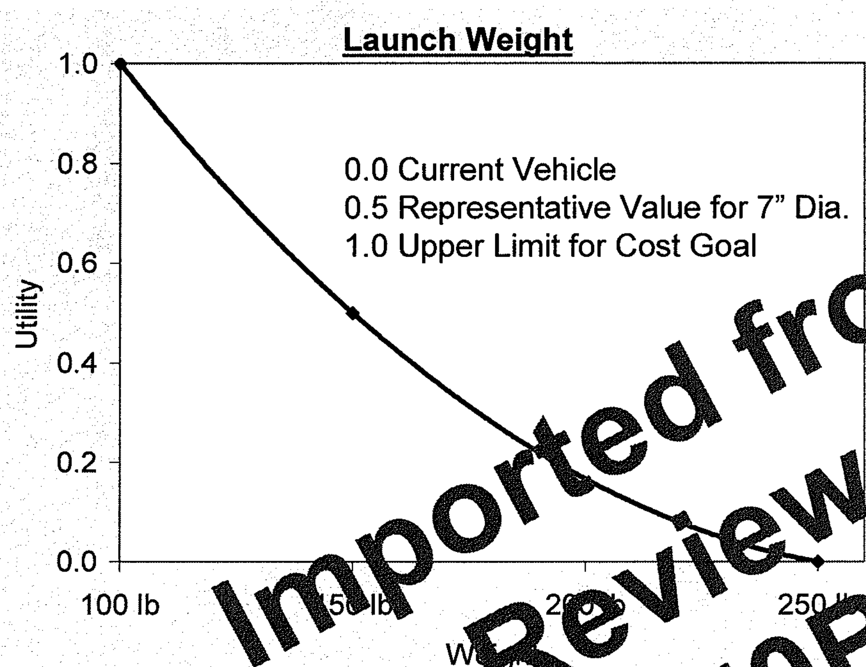
Candidate Scores & Rankings

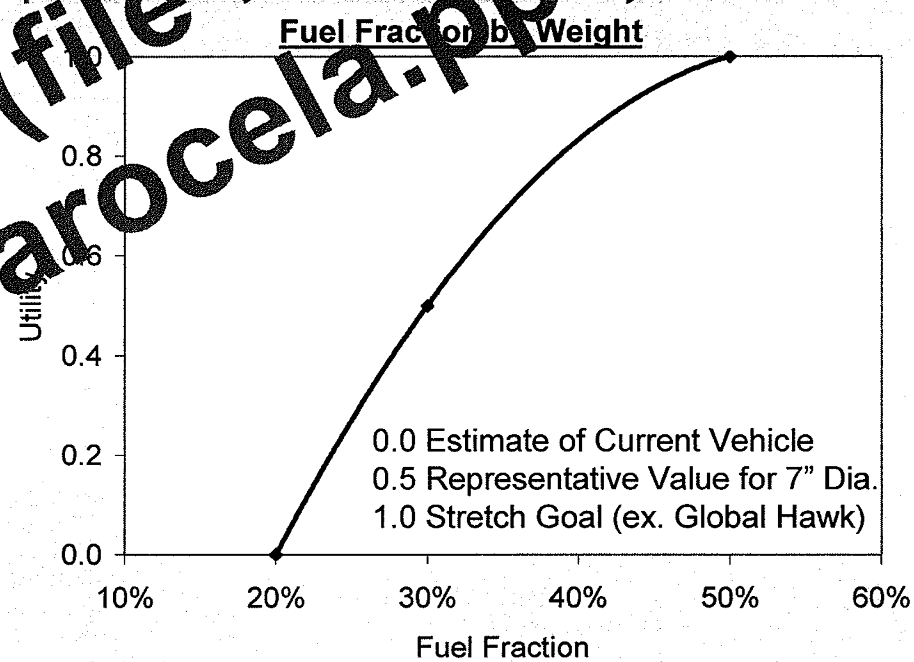
ALVIN Utility Functions



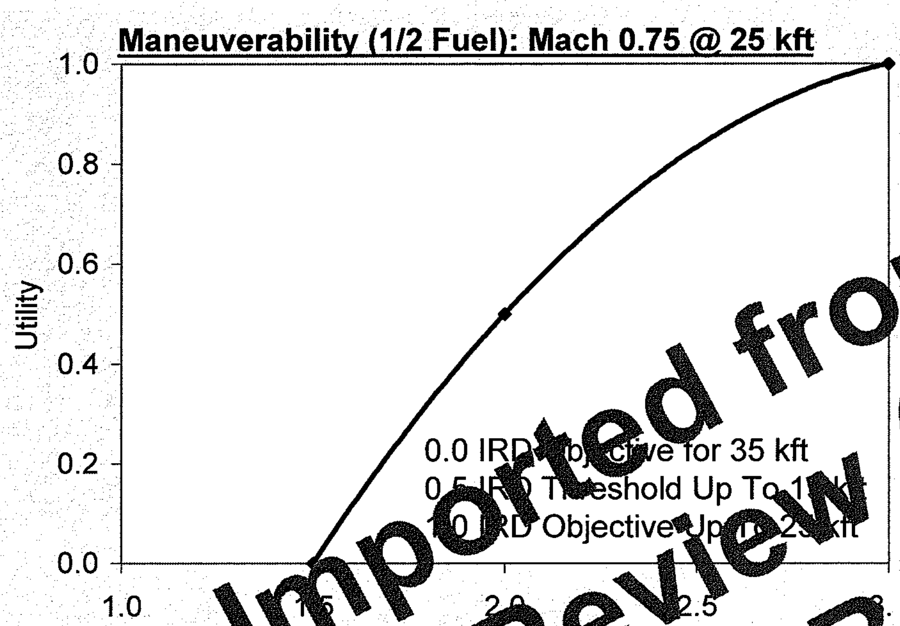


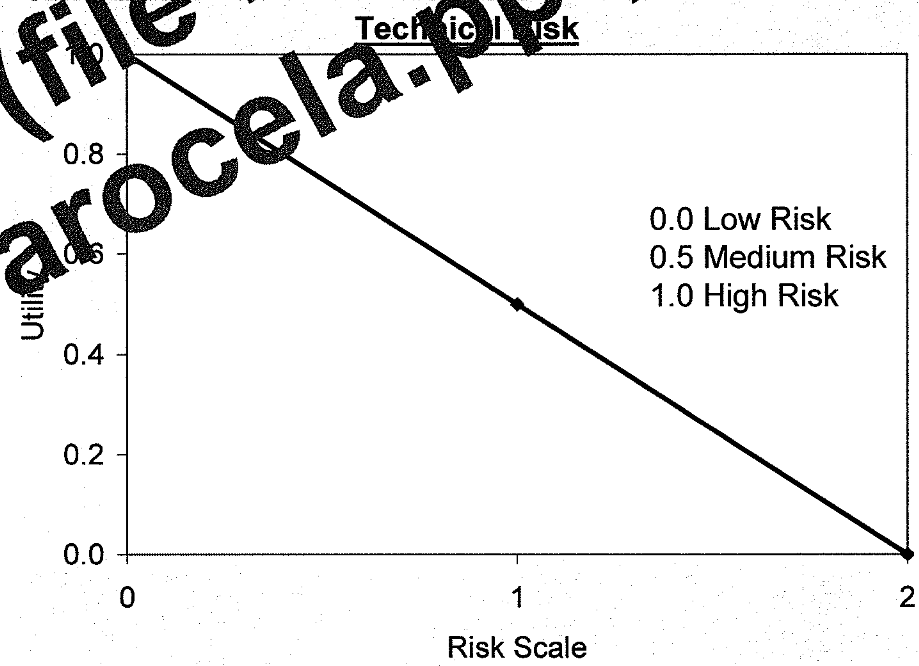
ALVIN Utility Functions





ALVIN Utility Functions





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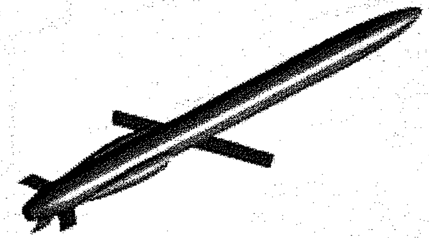


BOEING

Technology Item: Unconventional Wing

Oblique Wing, Diamondback Wing, Joined Wing

Risk:

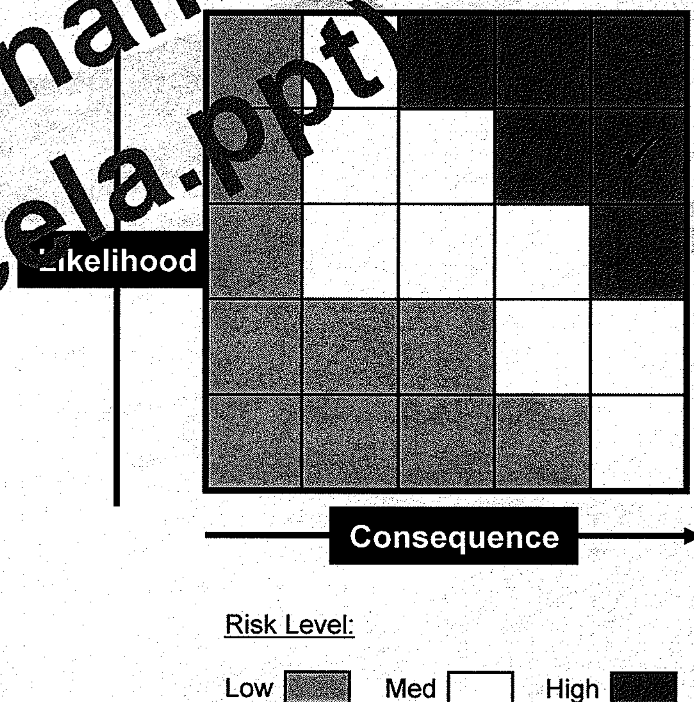
Unconventional wing performance will fall short of predictions

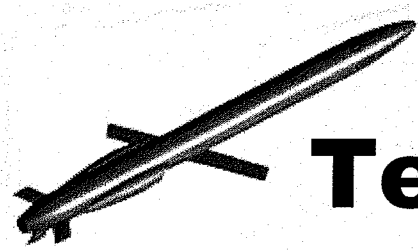
Consequences:

Performance shortfalls (speed, endurance)

Mitigation:

Wind tunnel measurements to validate aero code predictions. Carry alternative configuration through preliminary design phase as fall-back.





BOEING

Technology Item: Future Variant Evolution

Choice of Engine and Missile Diameter

Risk:

Future variants will require different engine installations to meet increased performance, payload and power requirements

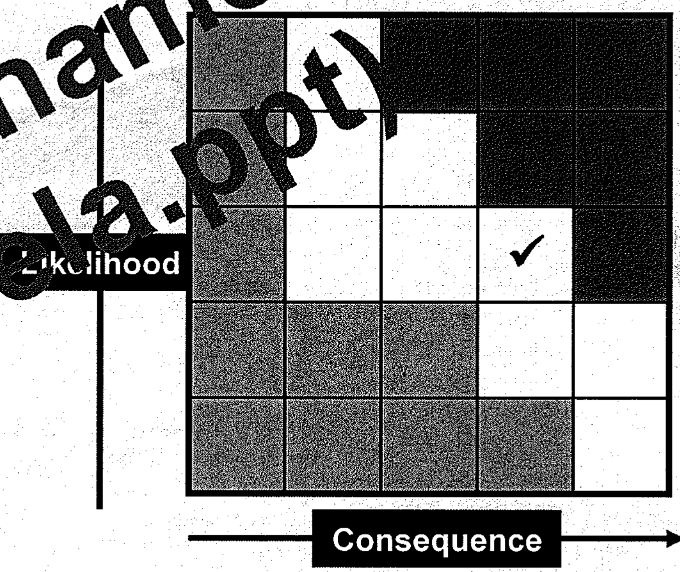
Consequences:

Future variant designs will diverge from MALD baseline; will require significant re-design

Mitigation:

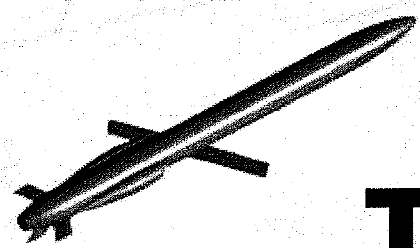
Conduct studies of future variants early.

Consider external or semi-recessed nacelle.



Risk Level:

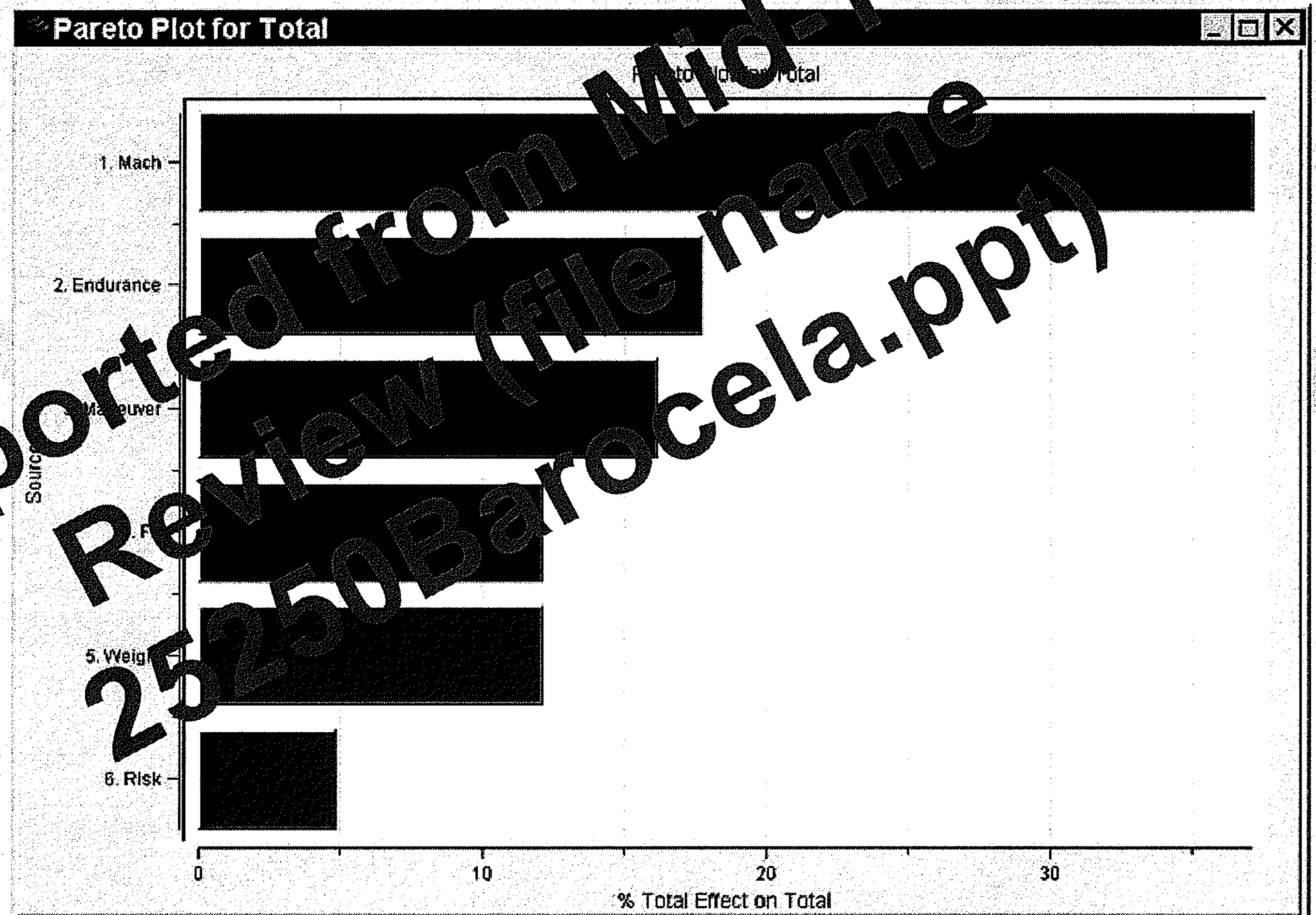
Low Med High

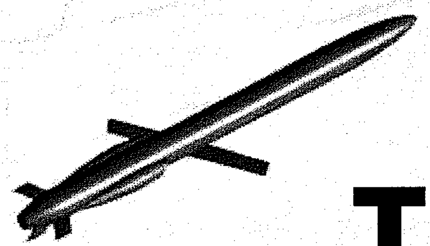


Trade Study Results

Candidate	Mach	Endurance	Maneuver	Weight	FF	Risk
ALV-1	0.99	55.3 min	2.7 g's	153 lb	27%	Medium
ALV-2	0.93	54.2 min	2.5 g's	161 lb	27%	Medium
ALV-3	0.90	59.6 min	2.4 g's	170 lb	29%	Medium
ALV-4	0.94	53.6 min	2.6 g's	164 lb	25%	High
ALV-5	1.00	59.1 min	2.7 g's	153 lb	27%	High
ALV-6	0.99	55.4 min	2.7 g's	152 lb	27%	High
ALV-7	0.97	67.6 min	2.6 g's	165 lb	31%	Low

iSIGHT Analysis: Utility Function Sensitivities





BOEING

Trade Study Scores*

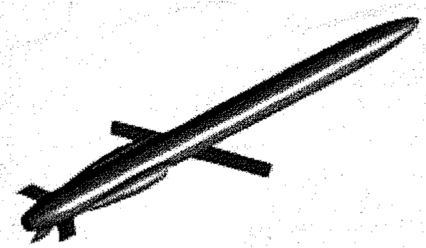
Candidate	Total	Rank
ALV-7	4.69	1
ALV-1	4.04	2
ALV-5	3.62	3
ALV-6	3.56	4
ALV-2	3.40	5
ALV-4	3.02	6
ALV-3	2.95	7

Weight Factors = 1

Candidate	Total	Rank
ALV-7	4.91	1
ALV-1	4.69	2
ALV-5	4.65	3
ALV-6	4.57	4
ALV-4	3.72	5
ALV-2	3.48	6
ALV-3	2.42	7

Pareto Weight Factors

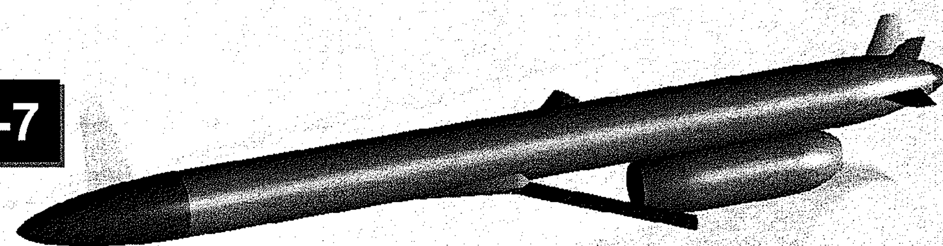
Maximum Possible Score = 6



BOEING

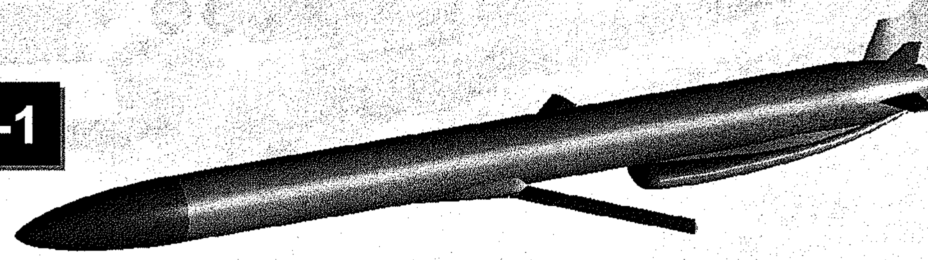
Preferred Concept Candidates

ALV-7



External Nacelle

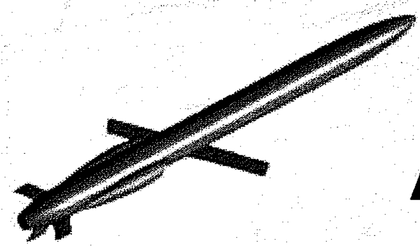
ALV-1



Benchmark Configuration

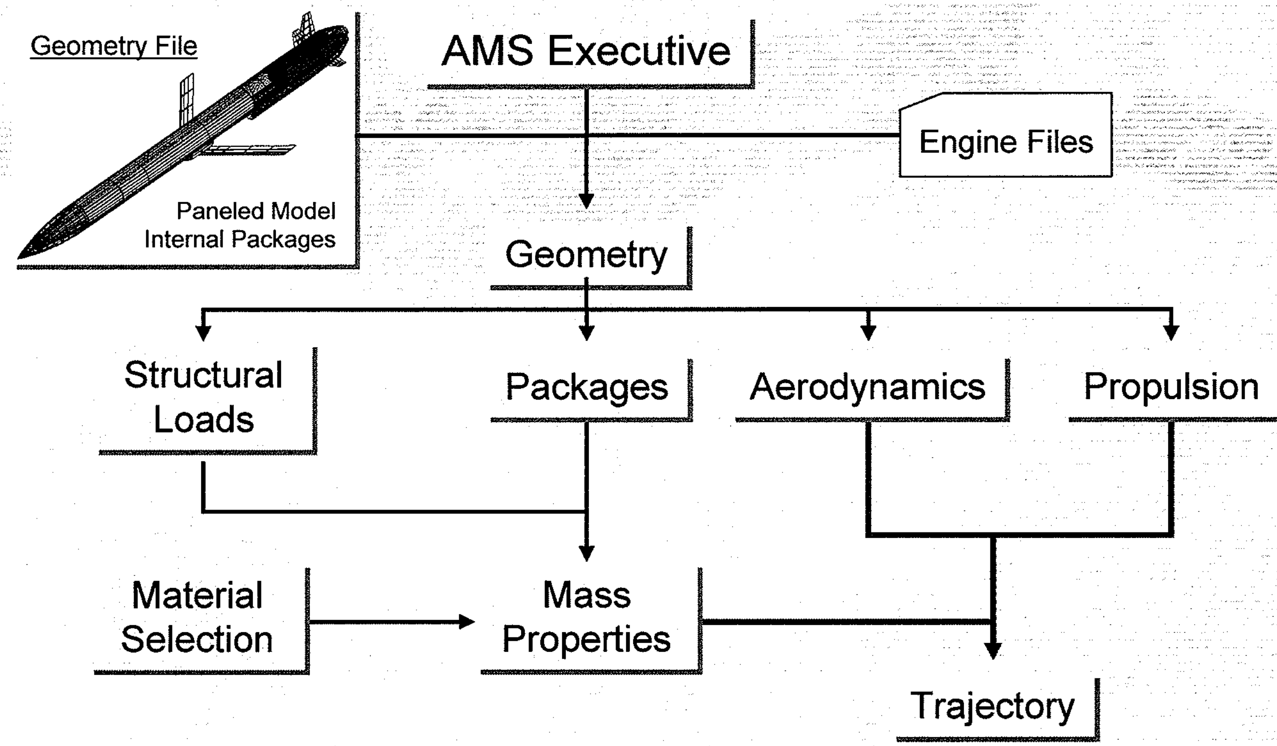
ALV-5

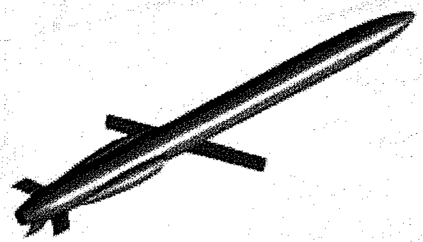
Oblique Wing
(may require bifurcated inlet)



Automated Missile Synthesis (AMS)

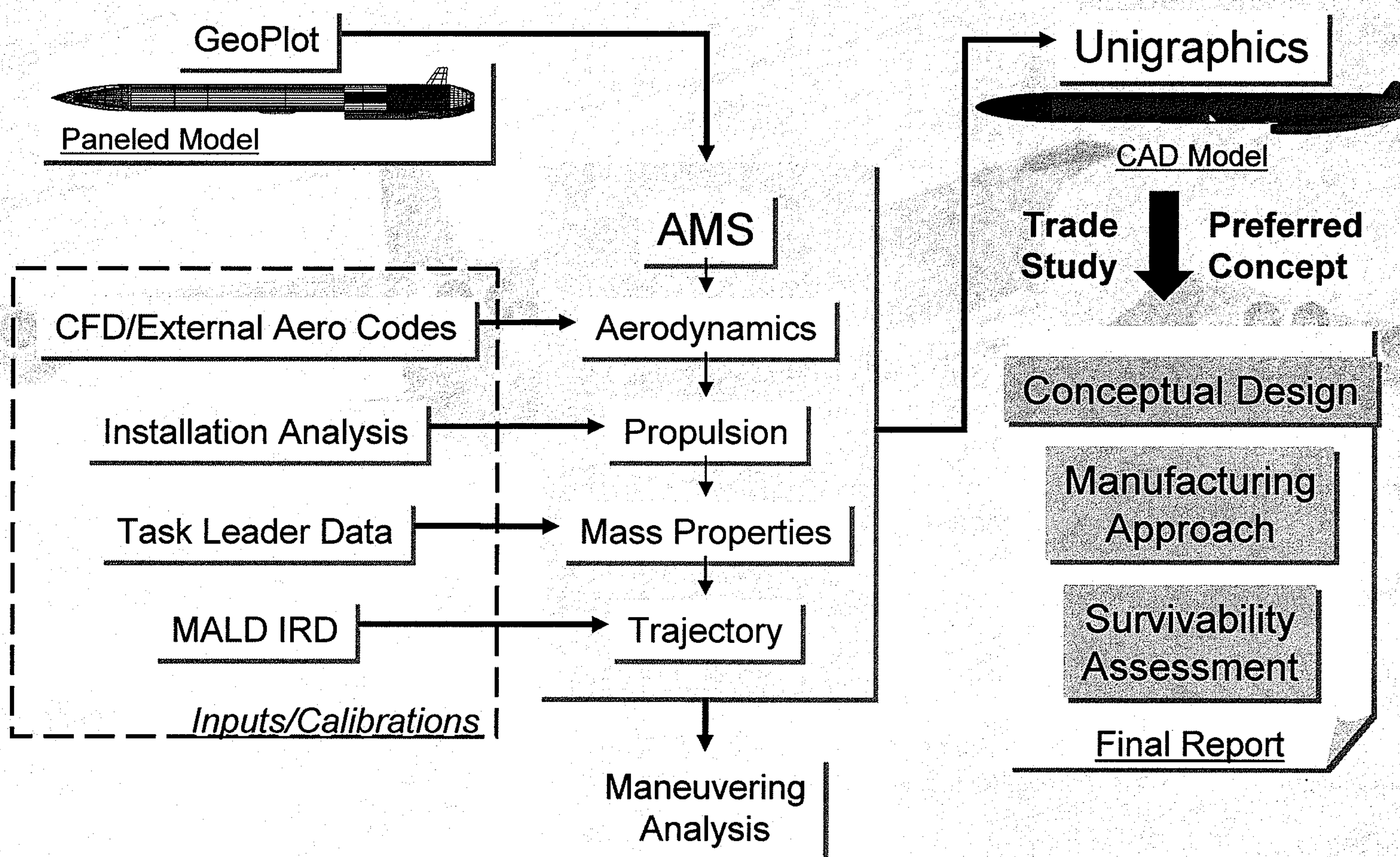
- Workstation-based synthesis tool
- Methodologies used in related codes (LODST, AVIS)





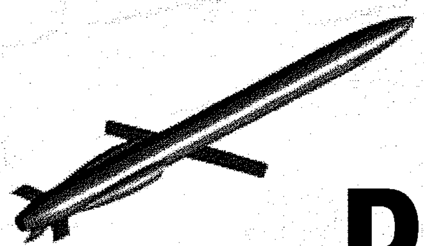
BOEING

Configuration Development



ALVIN Preferred Concept

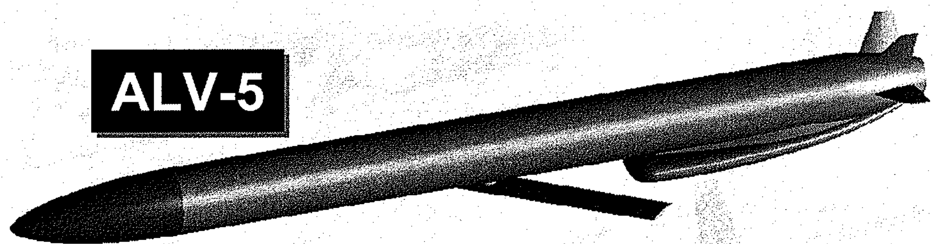
- Preferred Concept Design
- Preferred Concept Performance
- Manufacturing Approach
- Risk Mitigation



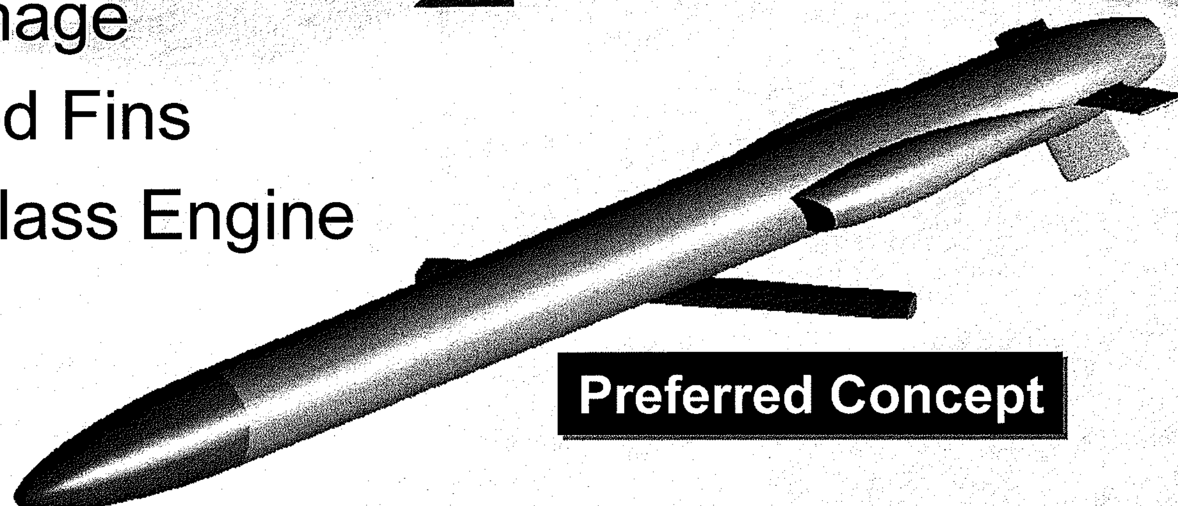
BOEING

Design Modifications

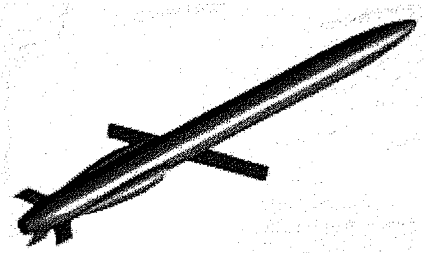
ALV-5



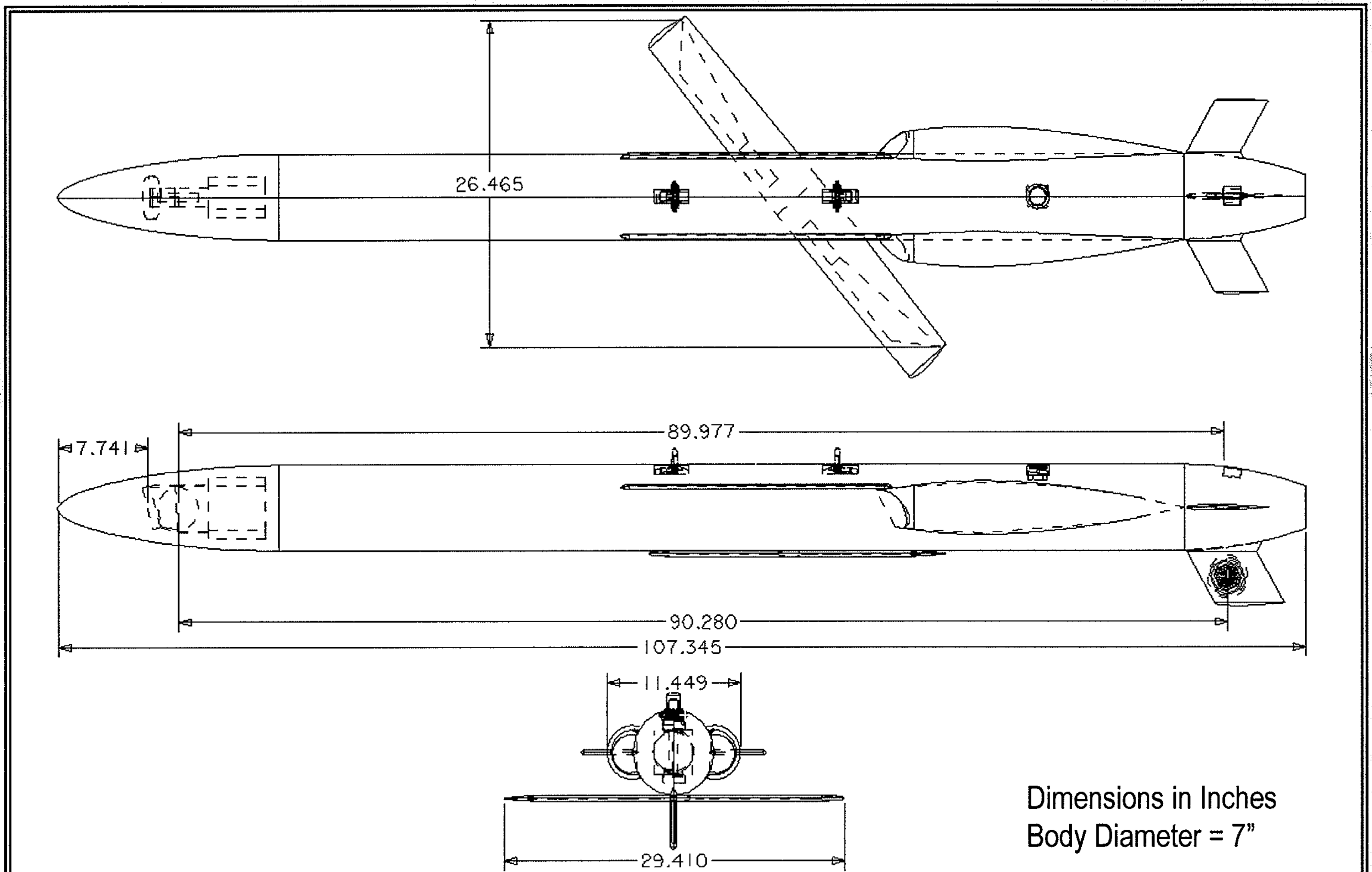
- Bifurcated Inlets
- Scarfed Inlet Face
- "Y-Tail" Empennage
- Planform-Aligned Fins
- 100 lb_f Thrust Class Engine

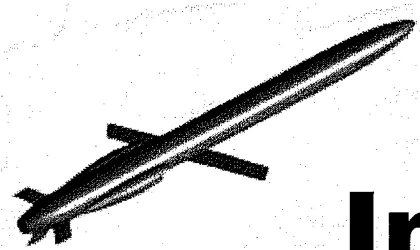


Preferred Concept



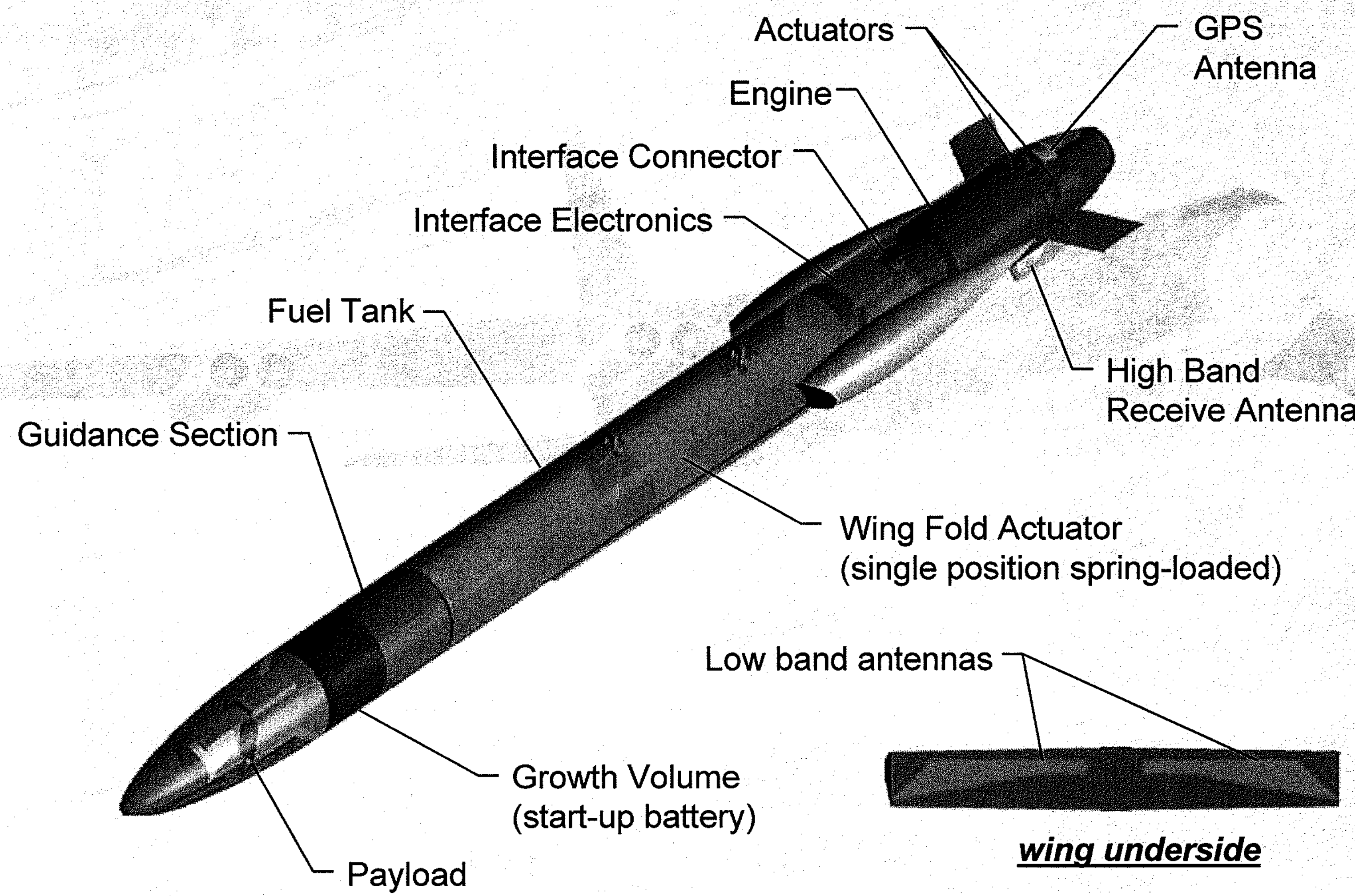
Preferred Concept

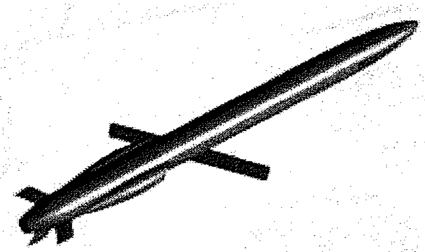




BOEING

Internal Components

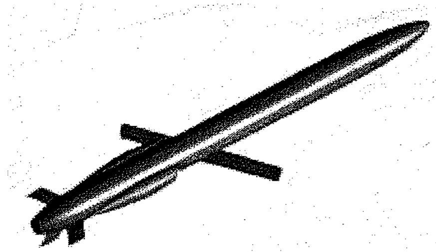




Weight Statement

ITEM	EQUIPMENT	STRUCTURE	FUEL	TOTAL
Body		26.8 lb		26.8 lb
Wing		2.0 lb		2.0 lb
Horizontal Tail		0.6 lb		0.6 lb
Vertical Tail		2.3 lb		2.3 lb
Wing Fold		0.8 lb		0.8 lb
Bifurcated Inlets		4.4 lb		4.4 lb
Payload	10.0 lb	2.4 lb		12.4 lb
Avionics	15.0 lb	3.1 lb		18.1 lb
Fuel Tank	1.0 lb	6.9 lb	40.7 lb	48.5 lb
Miscellaneous	8.0 lb	2.1 lb		10.1 lb
Actuators	5.0 lb	1.5 lb		6.5 lb
Growth	2.0 lb	0.8 lb		2.8 lb
INLET	1.2 lb	0.6 lb		1.8 lb
ENGINE	26.8 lb	4.5 lb		31.3 lb
TOTALS	69.0 lb	58.9 lb	40.7 lb	168.6 lb

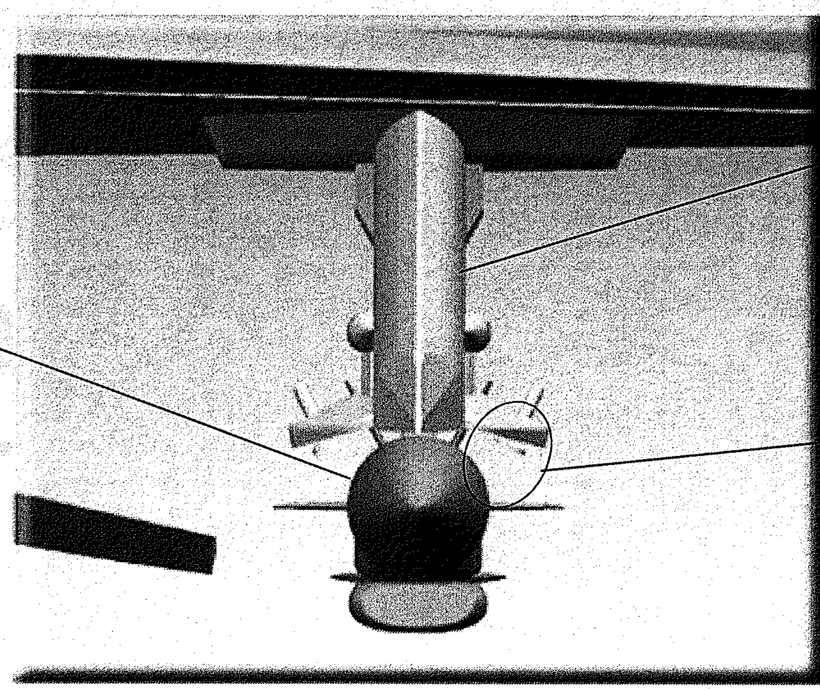
"Worst Case" with Heaviest Engine and Actuators



BOEING

Bomb Rack Integration Issue

MALD Mounted on the MAU-12



16S1710 C/D Pylon With MAU-12 Rack

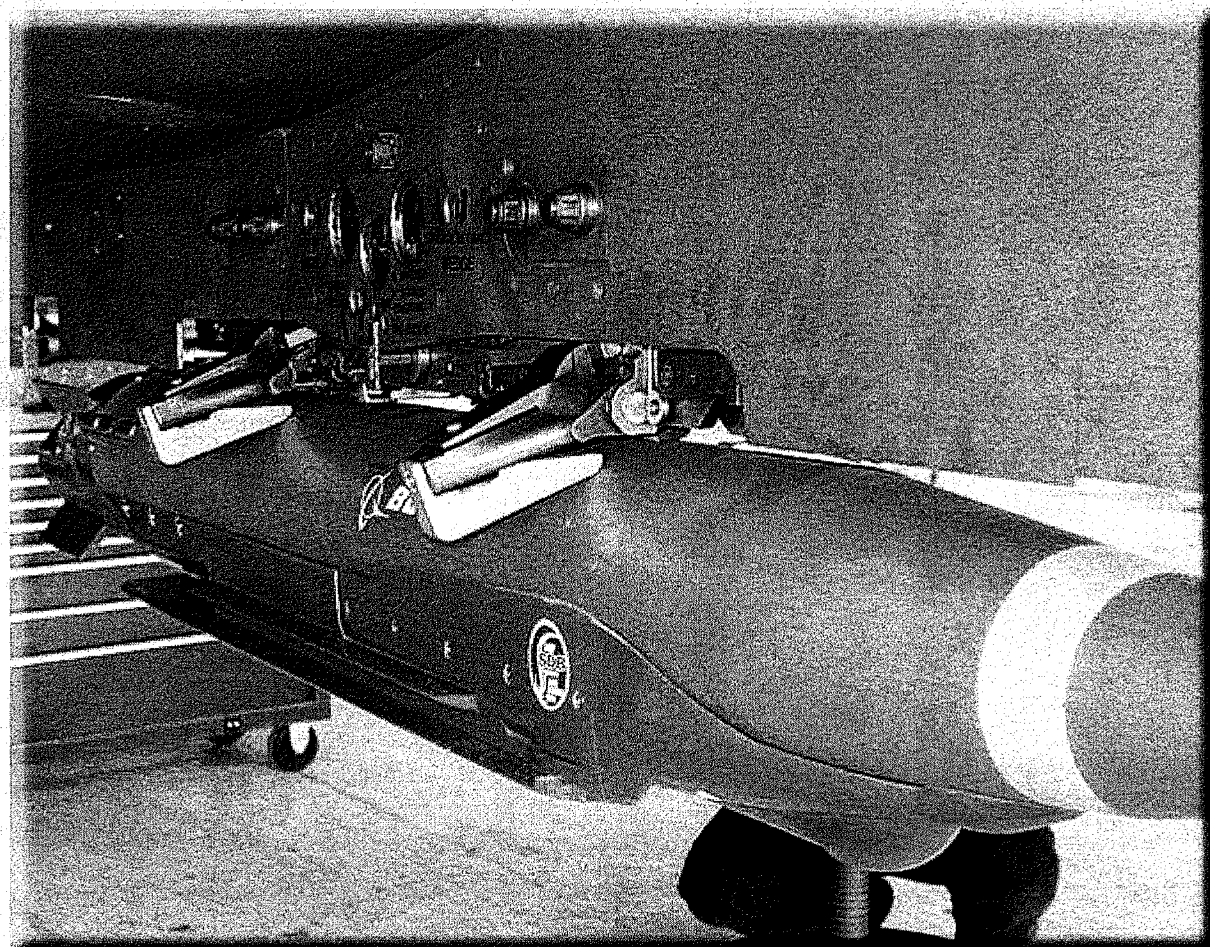
Sway Brace Jack Screw Tightening Problems May Be Encountered When Securing the MALD on This Pylon

FRONT VIEW

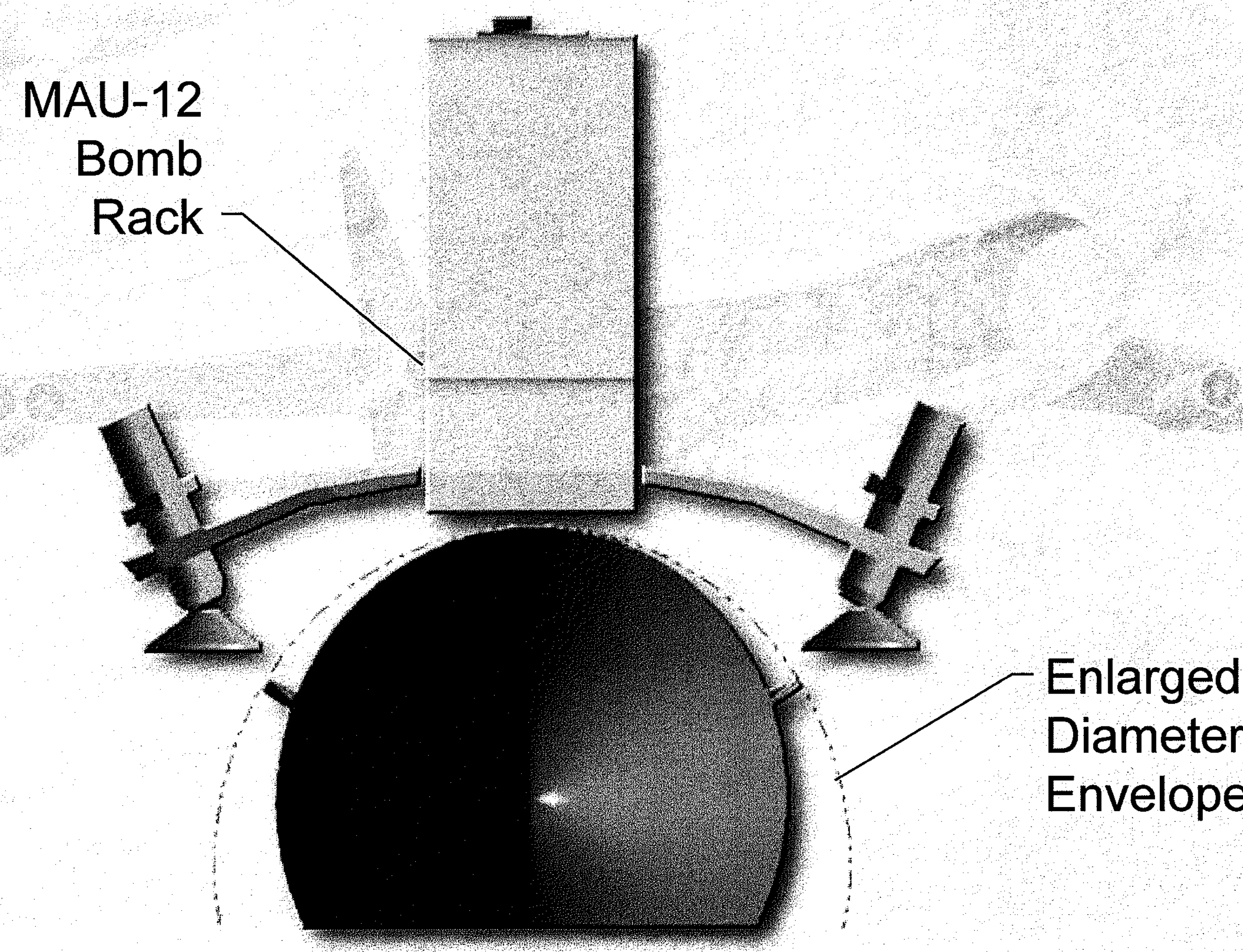
This Front View Shows the MALD Mounted on the 16S1710 C/D Pylon/MAU-12 Station 3 Is Shown With Station 7 Being Identical

BOEING

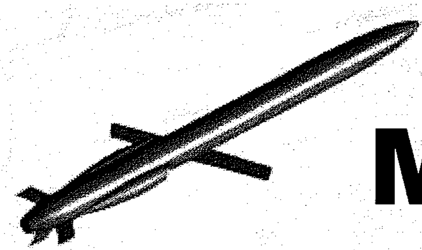
Small Diameter Bomb Sway Brace Extenders

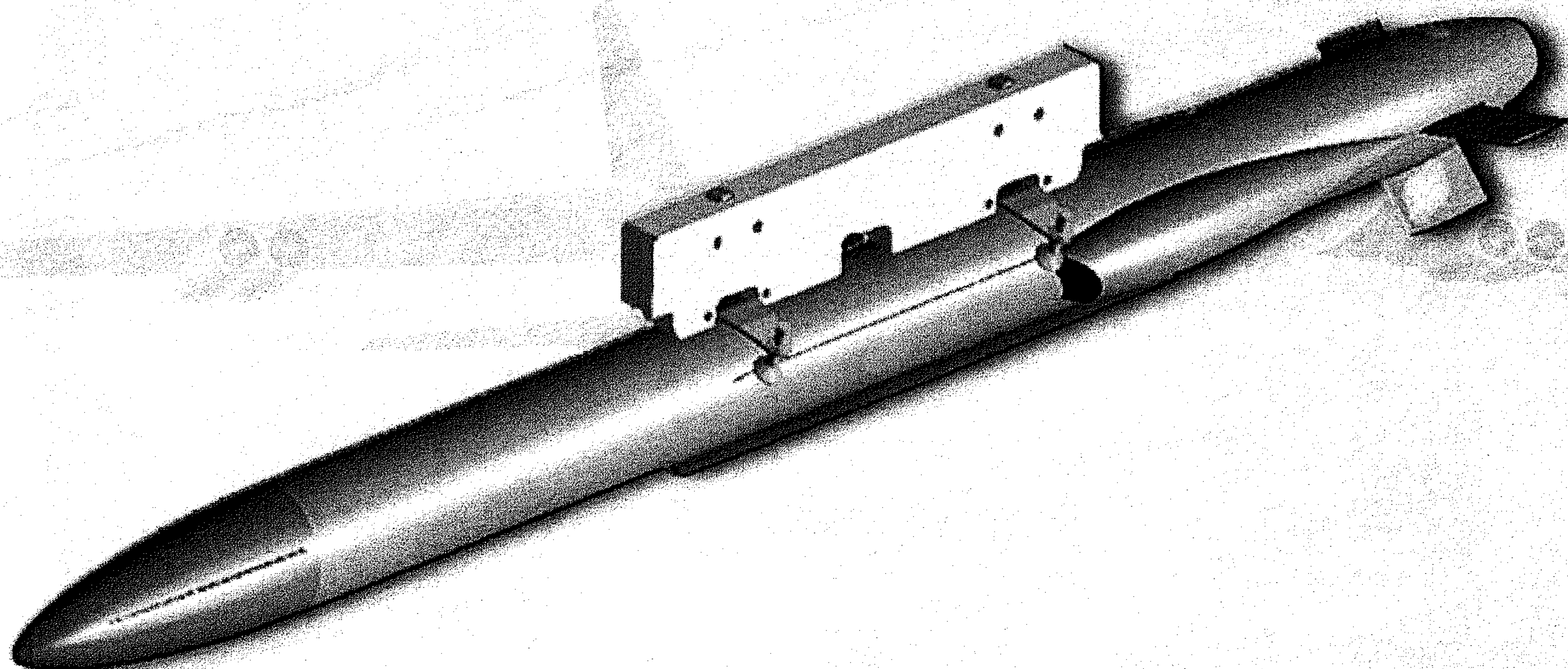


Strake Definition



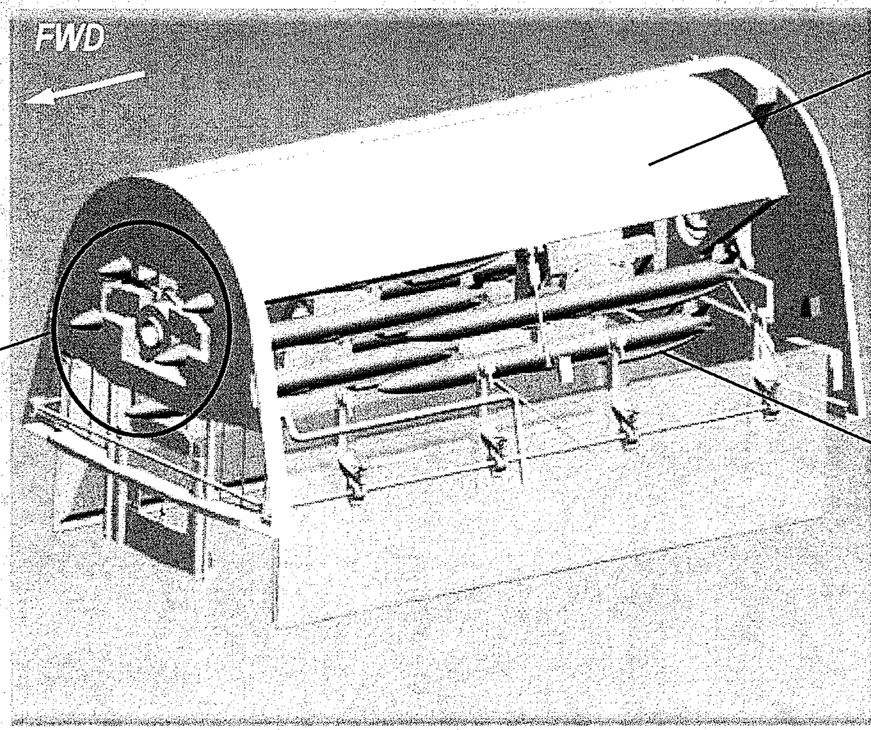
MAU-12 Attachment with Body Strake





B-1B Reduced Loadout

MALDS Mounted on Stations C11, C12, C21, C22 and C23 to the Bay FWD Bulkhead, Interference Detected



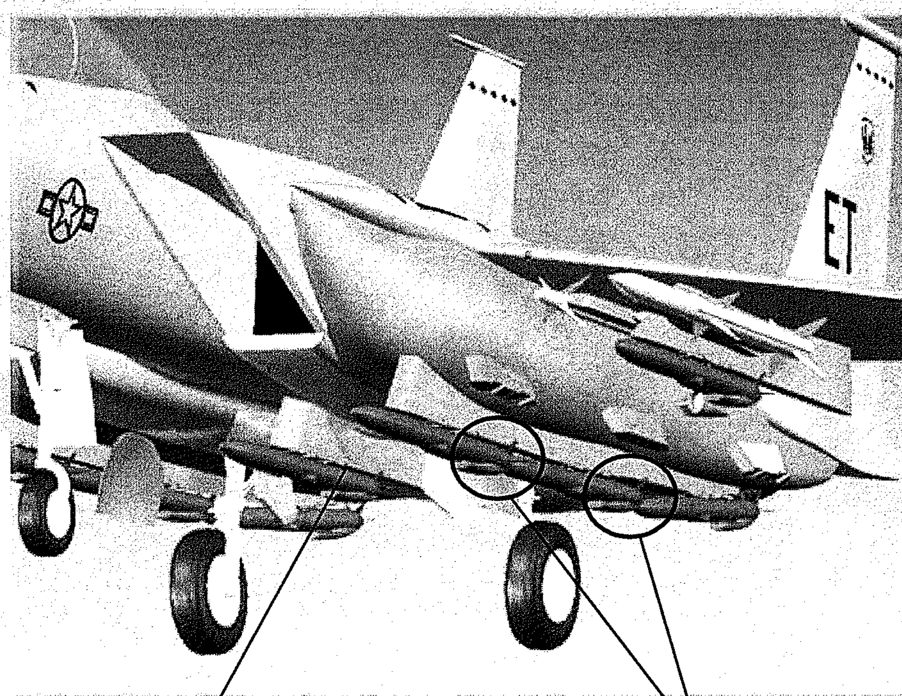
10 Station BRA

MALDS Mounted on All Stations of the BRA in the Aft Bay

AFT BAY SHOWN

This View Shows the MALDS Mounted on All Locations of the 10 Station BRA in the Aft Weapons Bay. The Aft Weapons Bay Was Used Because it Represents the Smallest Envelope, However, the Same Results Would Be Experienced in the Forward and Intermediate Weapons Bays. Aircraft Not Shown for Clarity.

F-15E Reduced Loadout



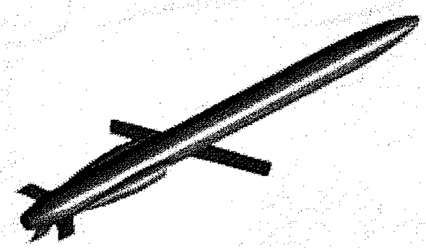
Station 5 MALD Has the Same Tail Fins to Pylon Interference Detected that Is Evident on stations 2, 8 and the CFT's

Configuration "A" and "B" Is shown in This Image With the Boeing MALD Concept Loaded Onto stations LC1, LC2 and LC3. Notice 2 Circled Areas Where There Is Some Major Interference Detected!

Loadout Improvement Options

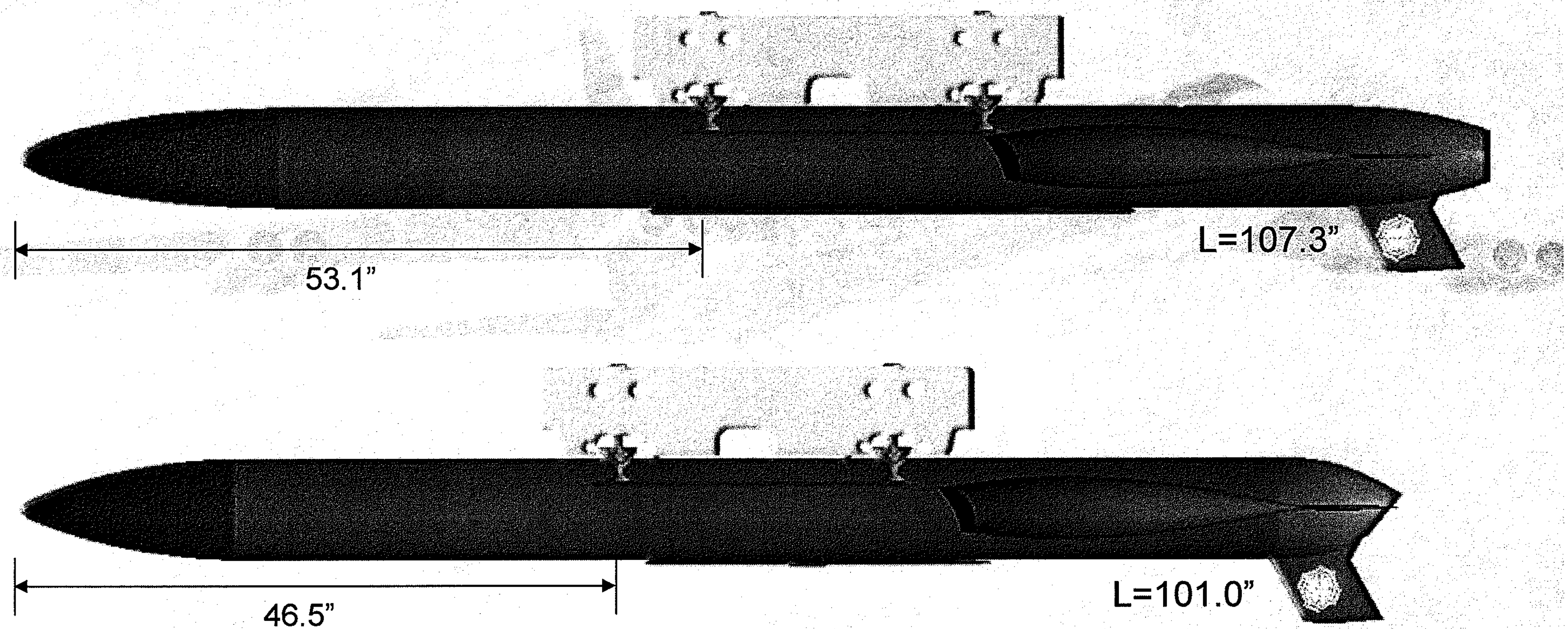
- Shorten Nose Cone
  - Replace Conic Ogive Profile With Sears-Haack Profile to Reduce Drag
- Choose Compact Engine to Shorten Boattail
  - Example: TJ-50M

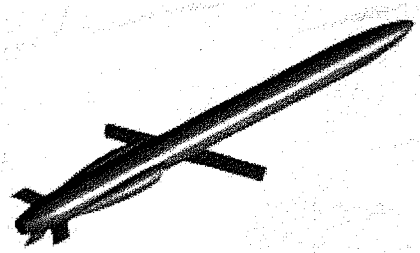
NOTE: launch lugs may straddle CG by ± 3 inches



Shortened Missile

Original Nose-Lug Distance = 55.1”





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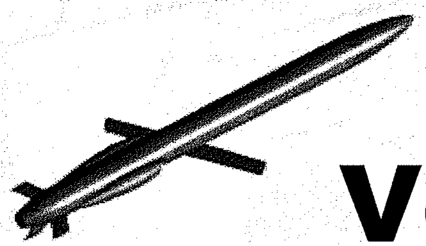
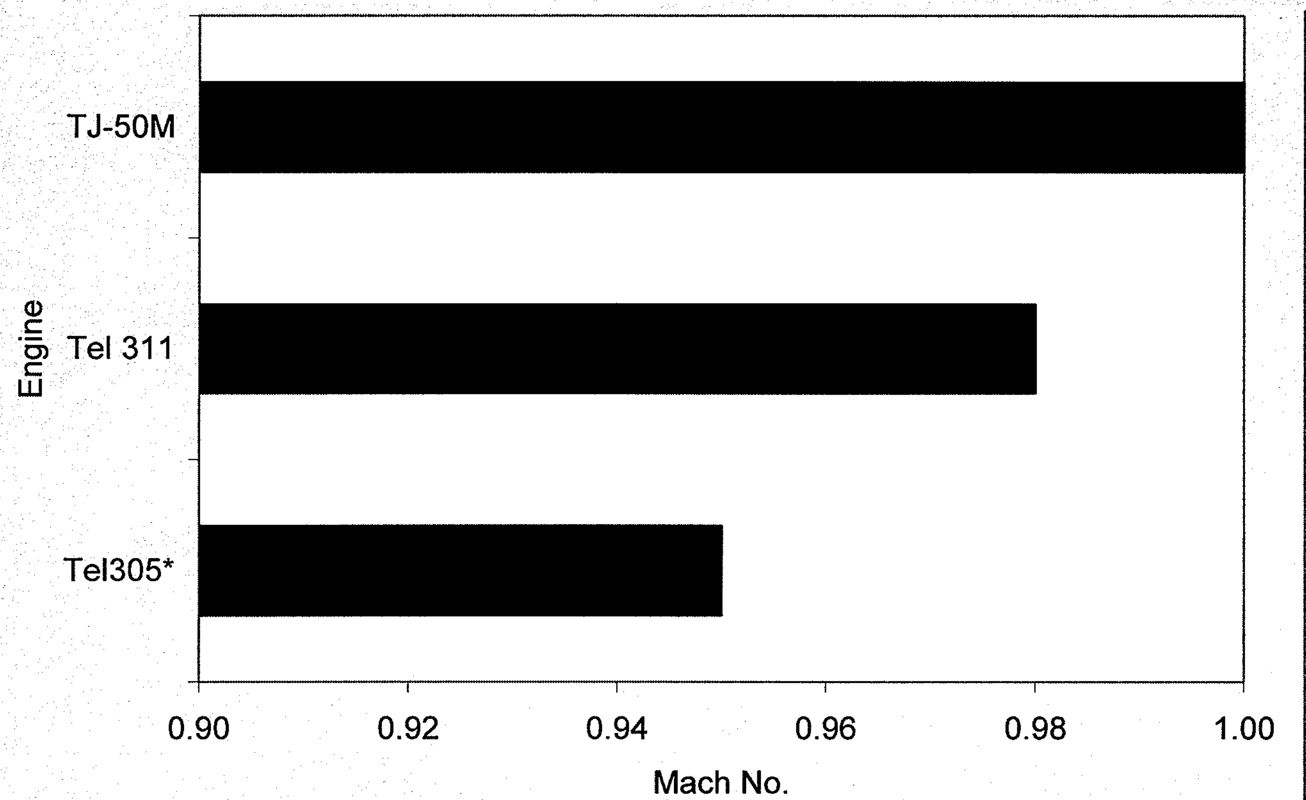
Air Vehicle

- Preferred Concept Design
- Preferred Concept Performance
- Manufacturing Approach
- Risk Mitigation

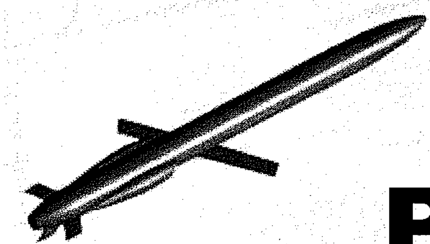


Vehicle Performance

Maximum Operating Airspeed at 40,000 ft



* maximum altitude = 35,000 ft



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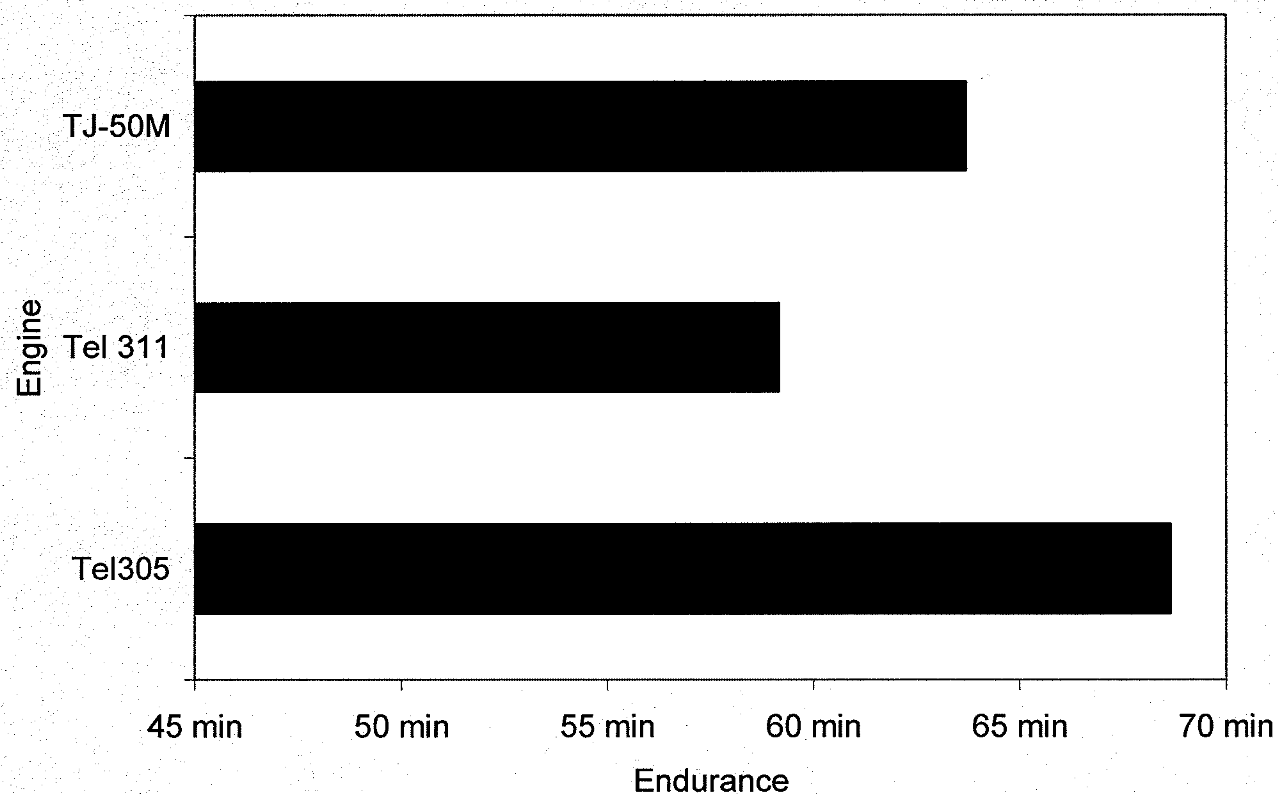
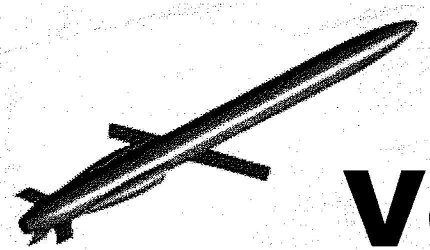
Performance (cont.)

Maximum Endurance at 35,000 ft

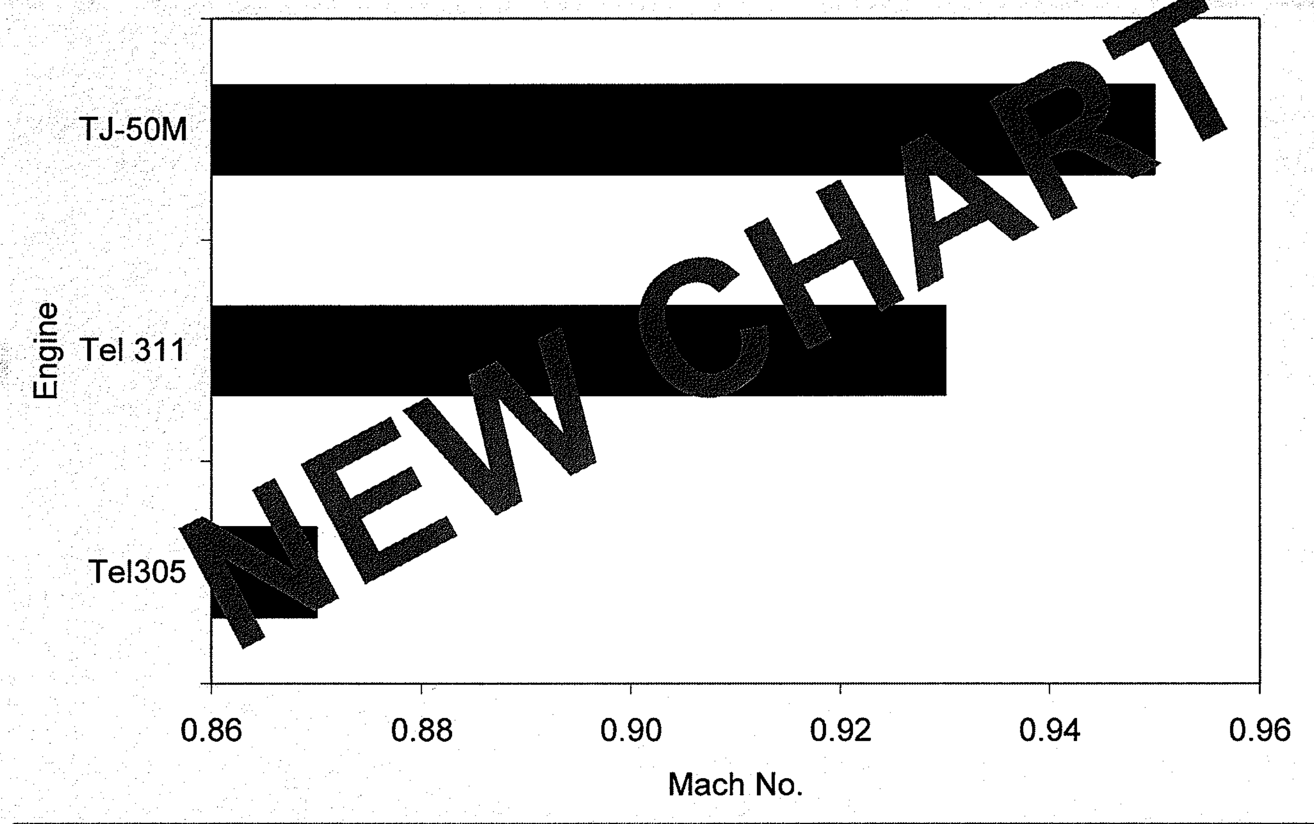


Operating Airspeed = Mach 0.8



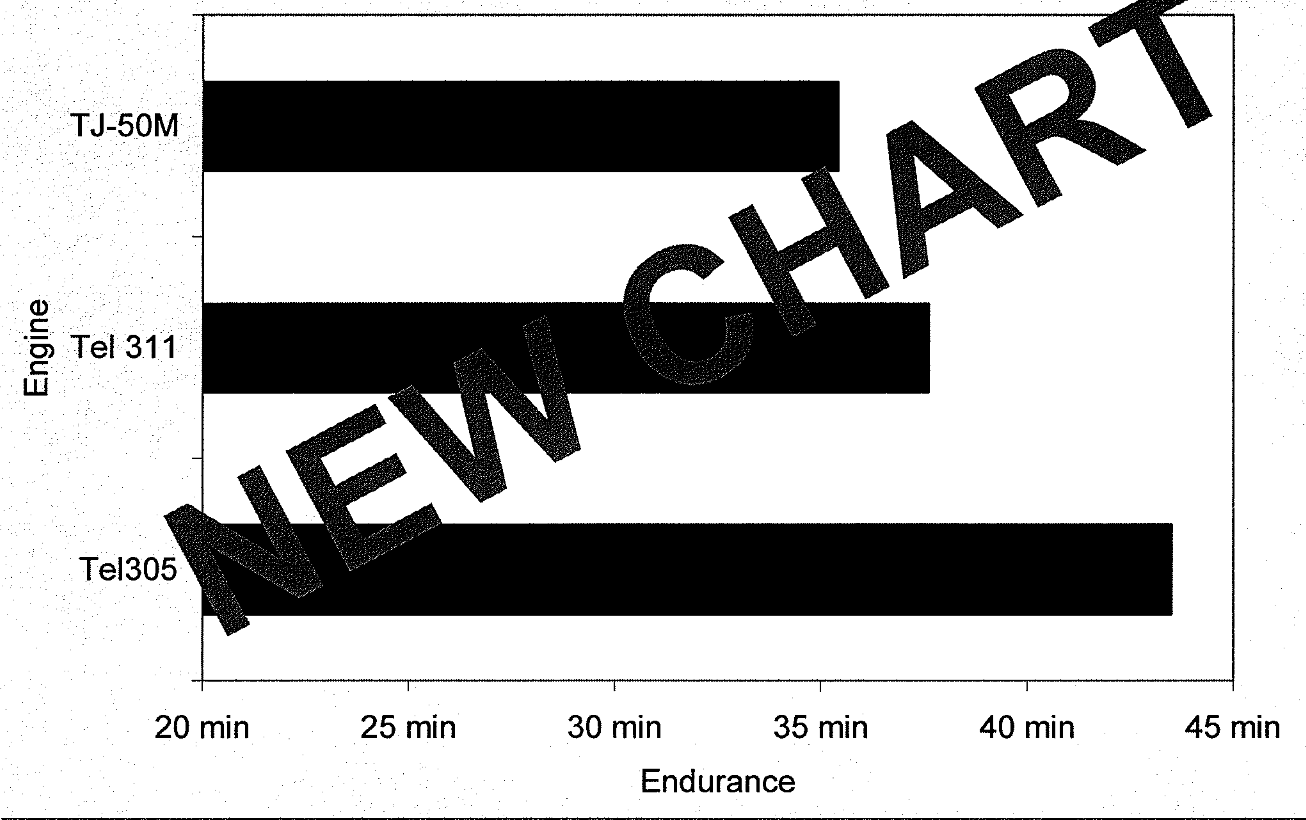
Vehicle Performance

Maximum Operating Airspeed at 3,000 ft

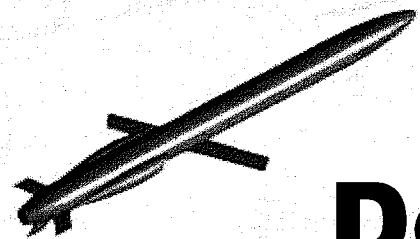


Performance (cont.)

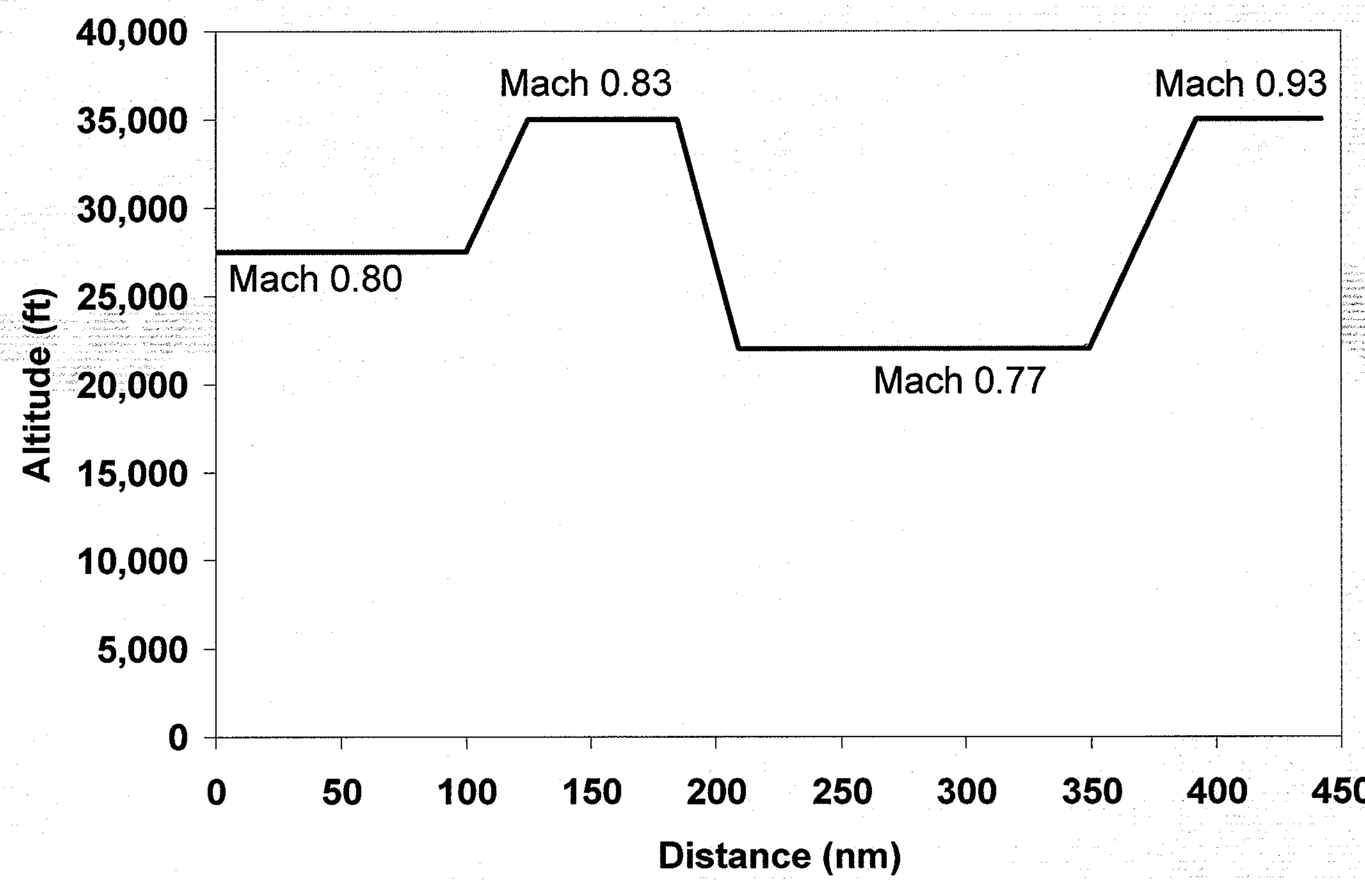
Maximum Endurance at 3,000 ft

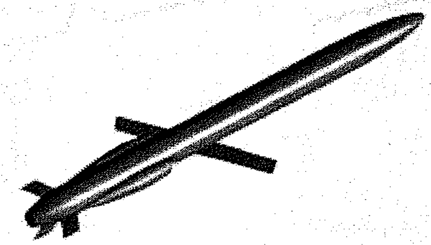


Operating Airspeed = Mach 0.55



Decoy Mission Profile





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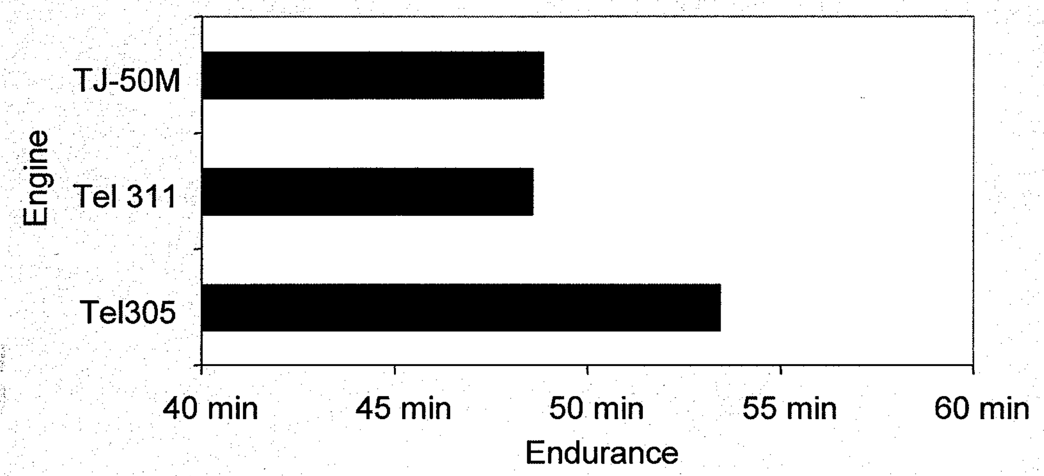
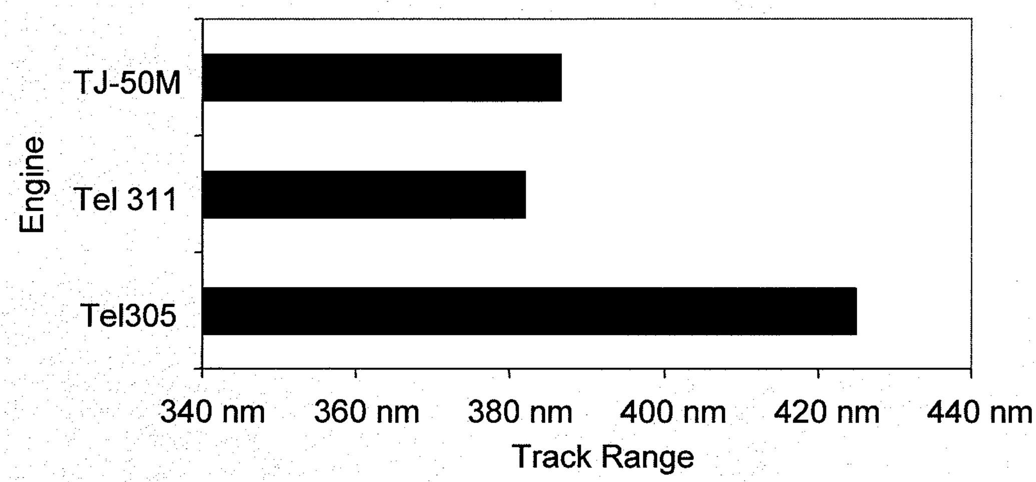
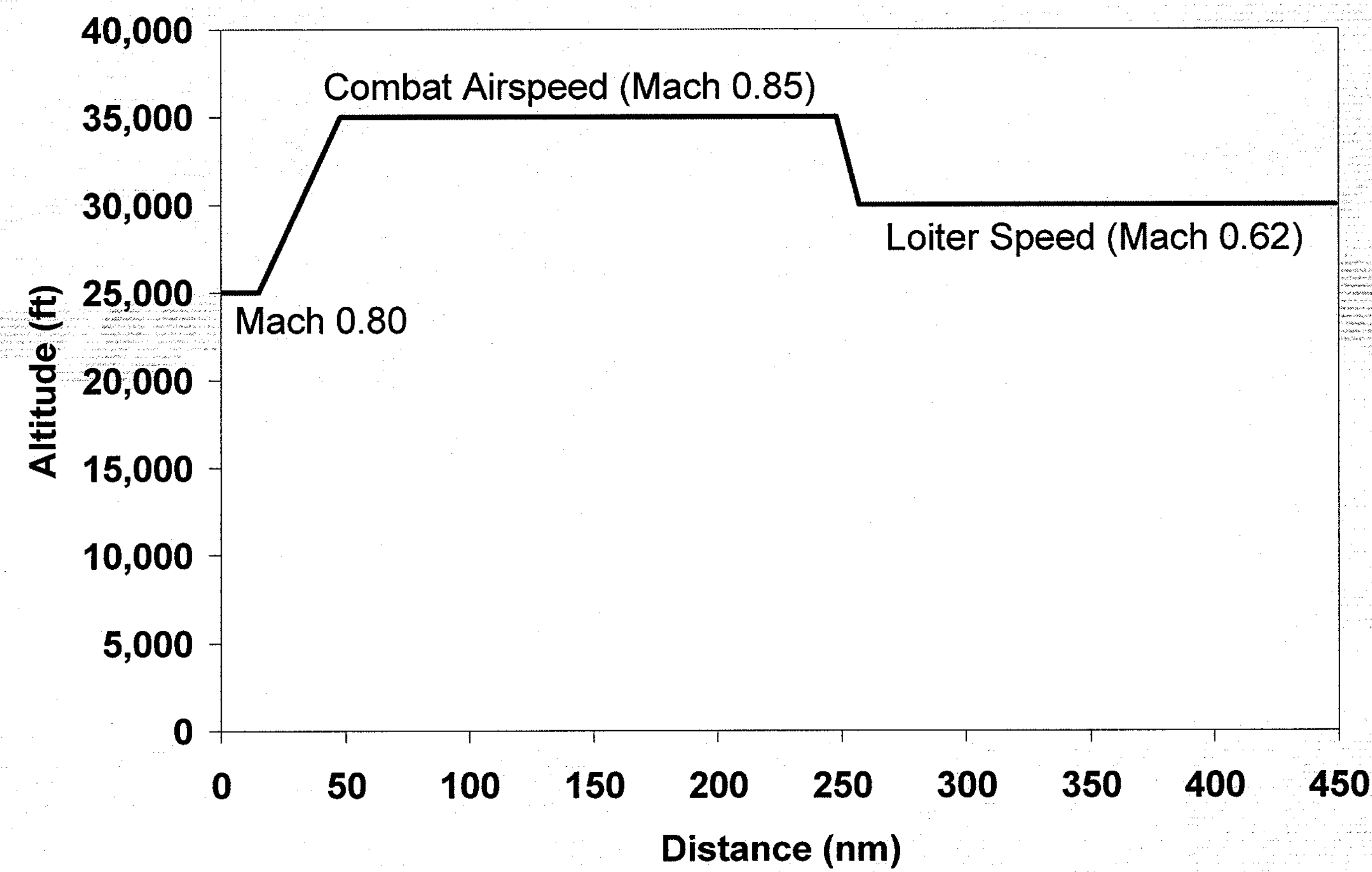
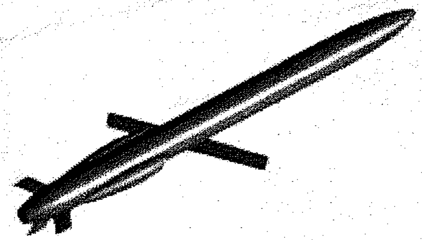
Decoy Reference Mission Performance



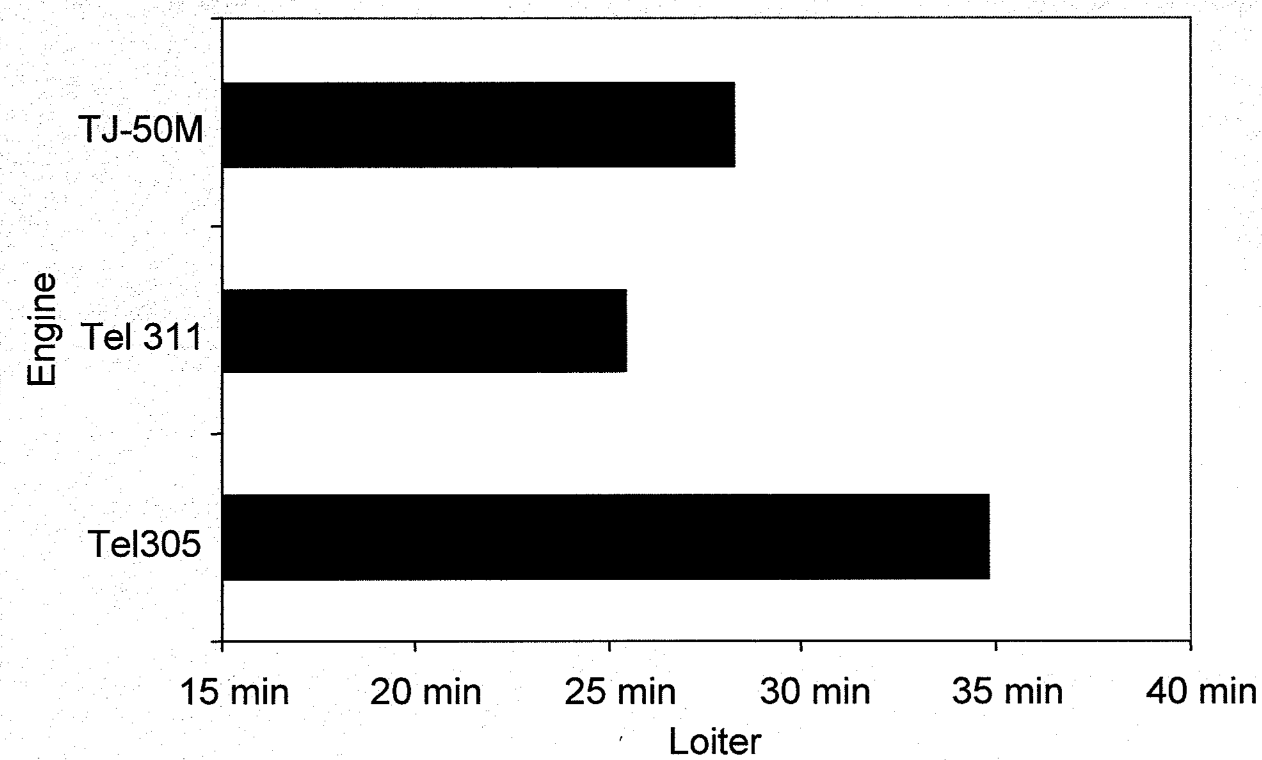


Jammer Mission Profile

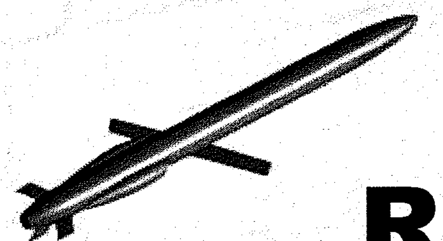




Jammer Mission Performance

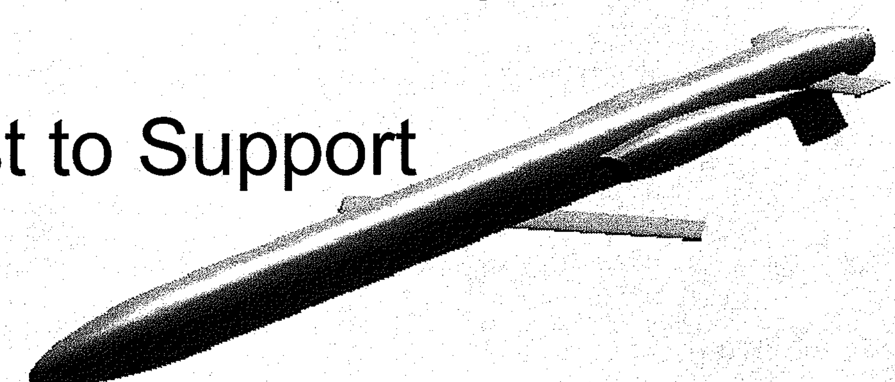


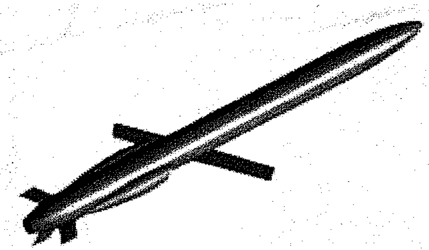
Optimum Loiter Speed
Teledyne Engines: Mach 0.62
TJ-50M: Mach 0.65-0.70



Radar Cross Section

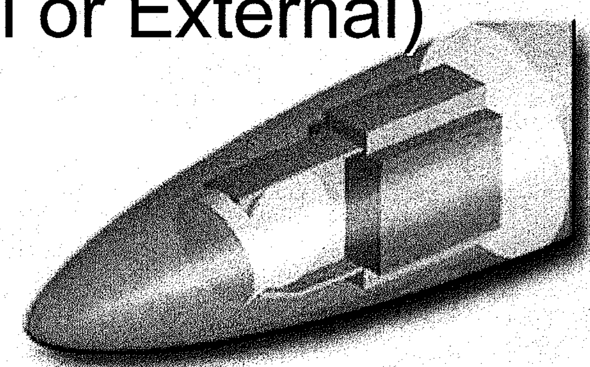
- Analysis Performed on "All-metal" Representation of Missile
  - VHF, UHF, L, S, C, X and Ku Bands
  - 360° Sweep at Different Elevations
- Results Indicate That Design:
  - Will Meet Requirements of Primary Decoy Mission
  - Is Sufficiently Robust to Support Growth Missions

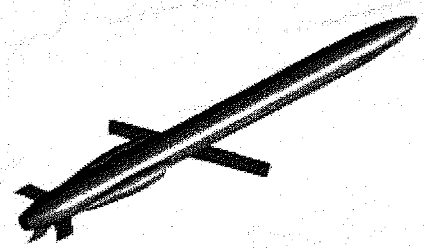




RCS (cont.)

- Several Design Features Will Degrade Radar Signature
  - Reflections From SAS Payload Through Radar-transparent Nose
  - Details of Engine Inlet Boundary Layer Diverter (Internal or External)
  - Body Strake



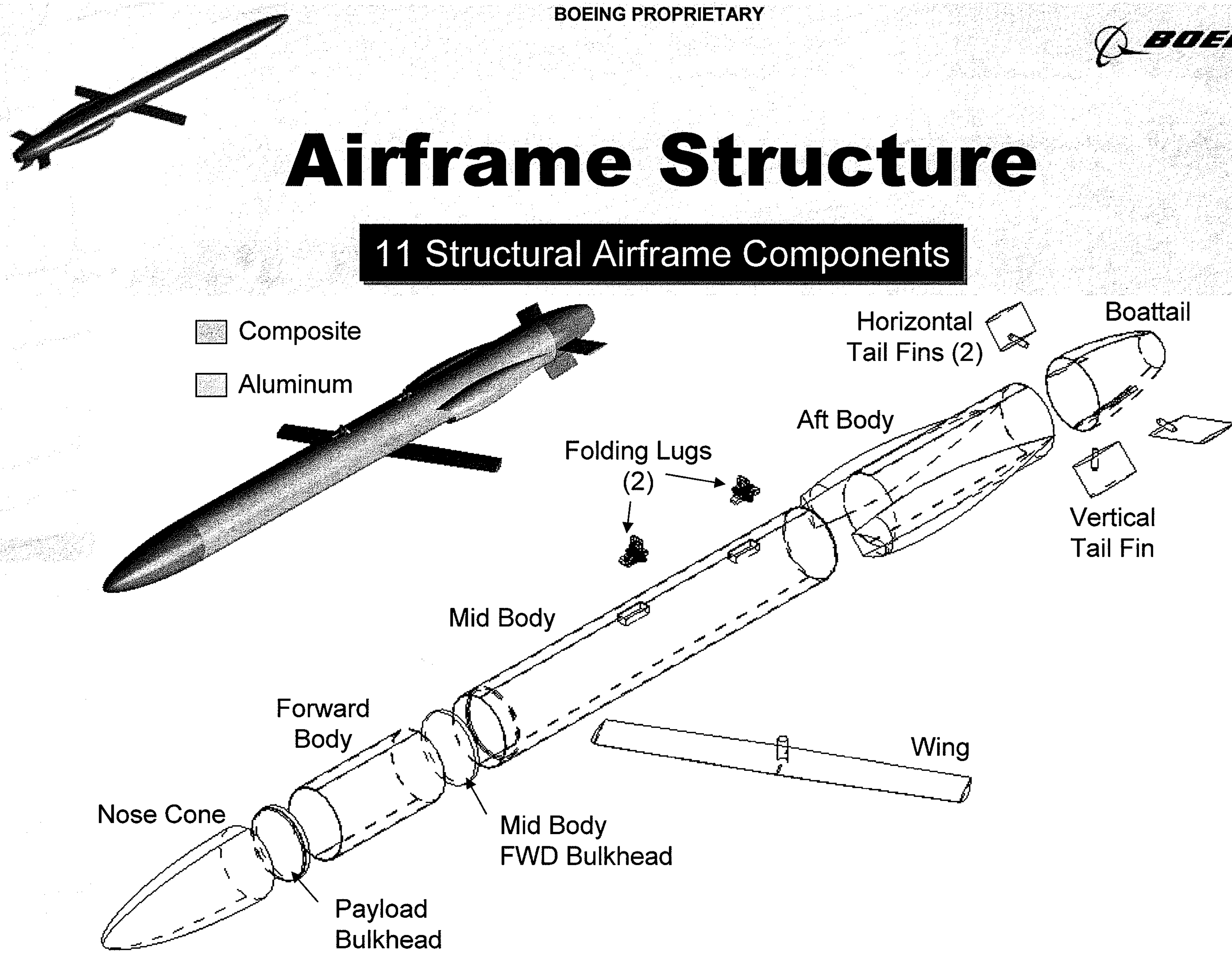


Air Vehicle

- Preferred Concept Design
- Preferred Concept Performance
- Manufacturing Approach
- Risk Mitigation

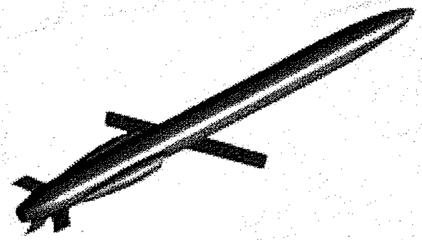
Airframe Structure

11 Structural Airframe Components



Materials and Processes

Component	Material	Process
Nose Cone	Glass Fiber Filled Ultem	Injection Molding
Payload Bulkhead	Aluminum	High Speed Machining
Forward Body	Aluminum	Extruded Tube
Mid Body Forward Bulkhead	Aluminum	Casting
Mid Body	Aluminum	Casting
Aft Body	Aluminum	Casting
Boattail	Glass Vinylester	Compression Molding
Wing	Glass/Epoxy with Spindle Insert	Resin Transfer Molding
Vertical Tail Fin	Glass/Epoxy with Root Fitting	Resin Transfer Molding
Horizontal Tail Fins	Glass Fiber Filled Ultem with Spindle Insert	Injection Molding
Folding Lugs	Steel	Machining



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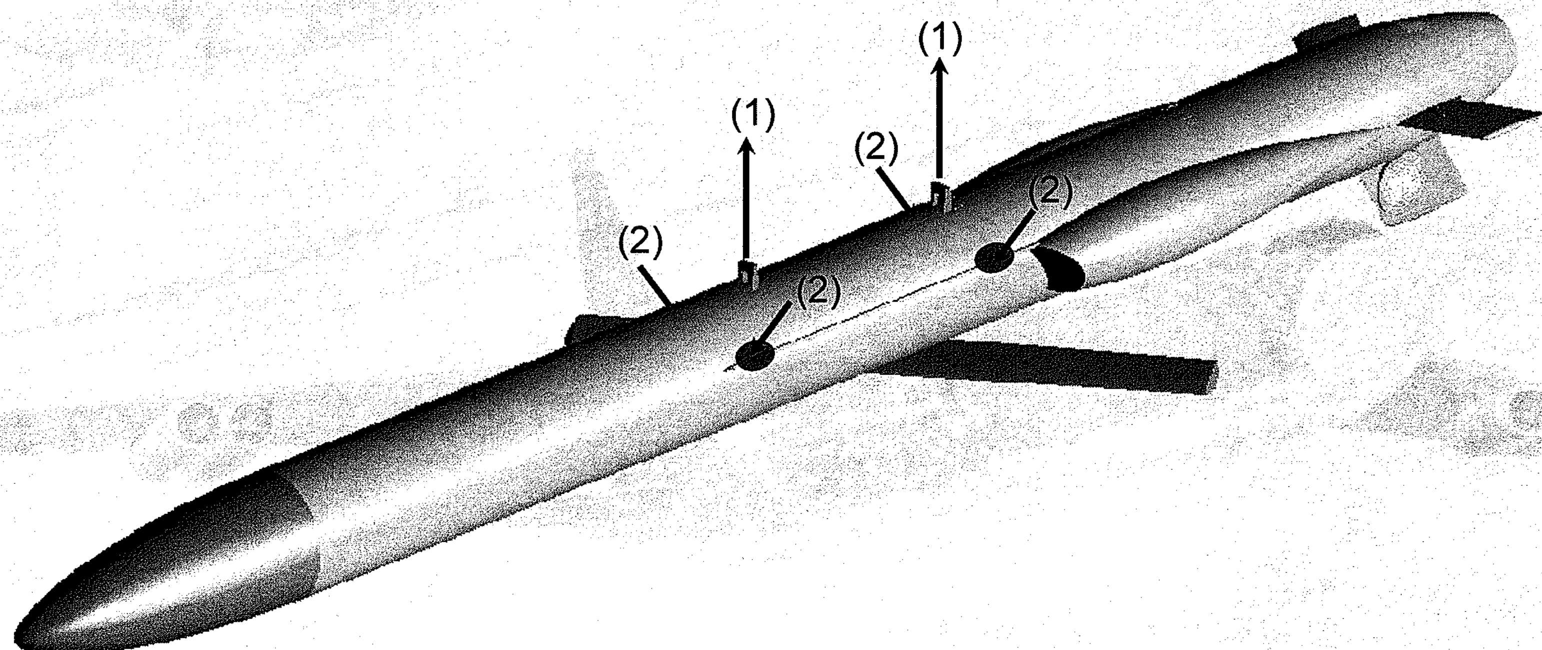
Component Sizing Conditions

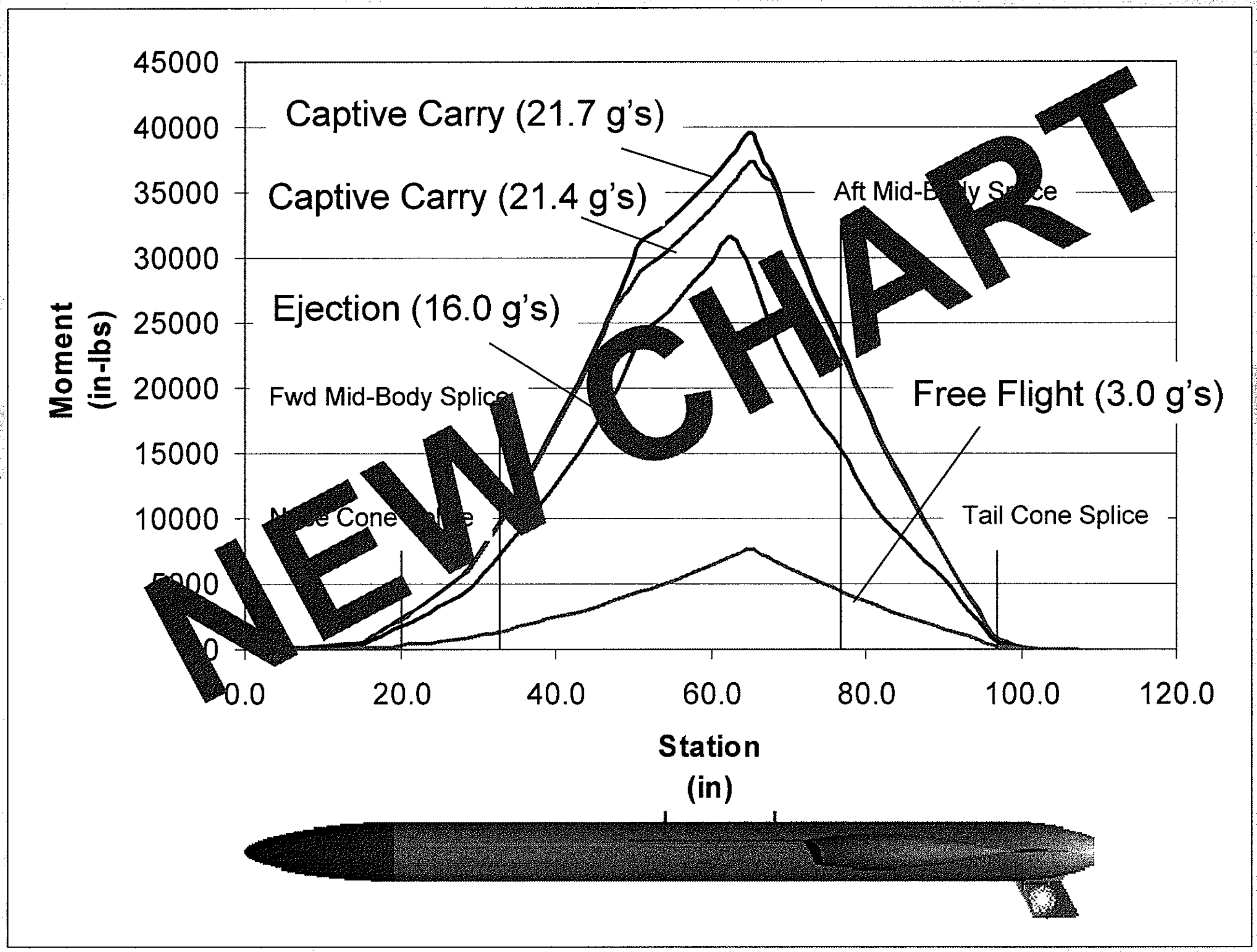
Component	Captive Carry	Ejection	Free Flight	Internal Pressure
Nose Cone	▤	▤	▤	
Payload Bulkhead	▤	▤	▤	
Forward Body	▤	▤	▤	
Mid Body Forward Bulkhead	▤	▤	▤	▤
Mid Body	▤	▤	▤	▤
Aft Body	▤	▤	▤	
Boattail	▤	▤	▤	
Wing			▤	
Vertical Tail Fin			▤	
Horizontal Tail Fins			▤	
Folding Lugs	▤			

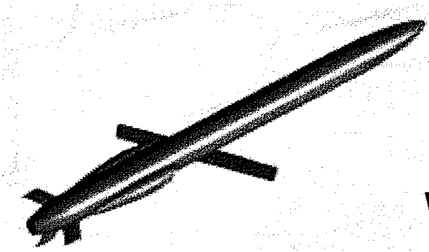
Preliminary Design Loads



(1) Maximum Hook Tension (2 places) = 2,000 lb_f
(2) Maximum Sway Brace Compression (4 places) = 2,000 lb_f
(3) Maximum Captive Carry Acceleration = 13 g's vertical, 22 g's total
(4) Ejection Acceleration = 16 g's
(5) Maximum Flight Acceleration = 3 g's

Preliminary Body Bending Moments





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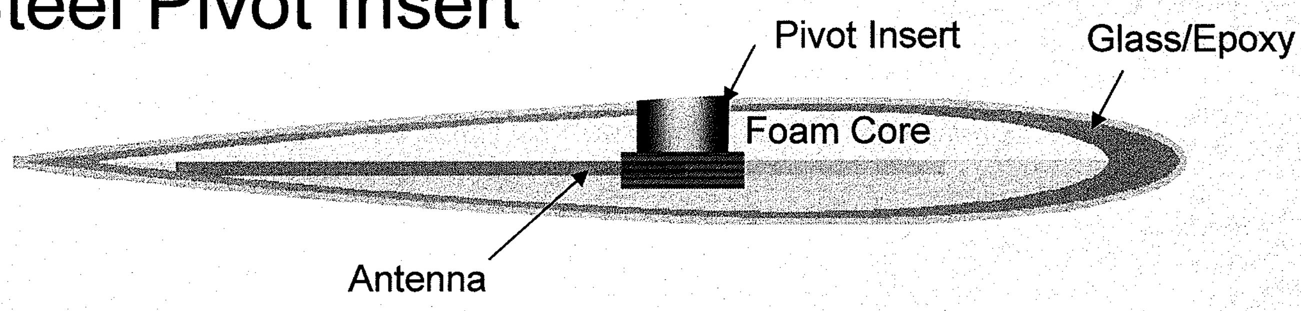
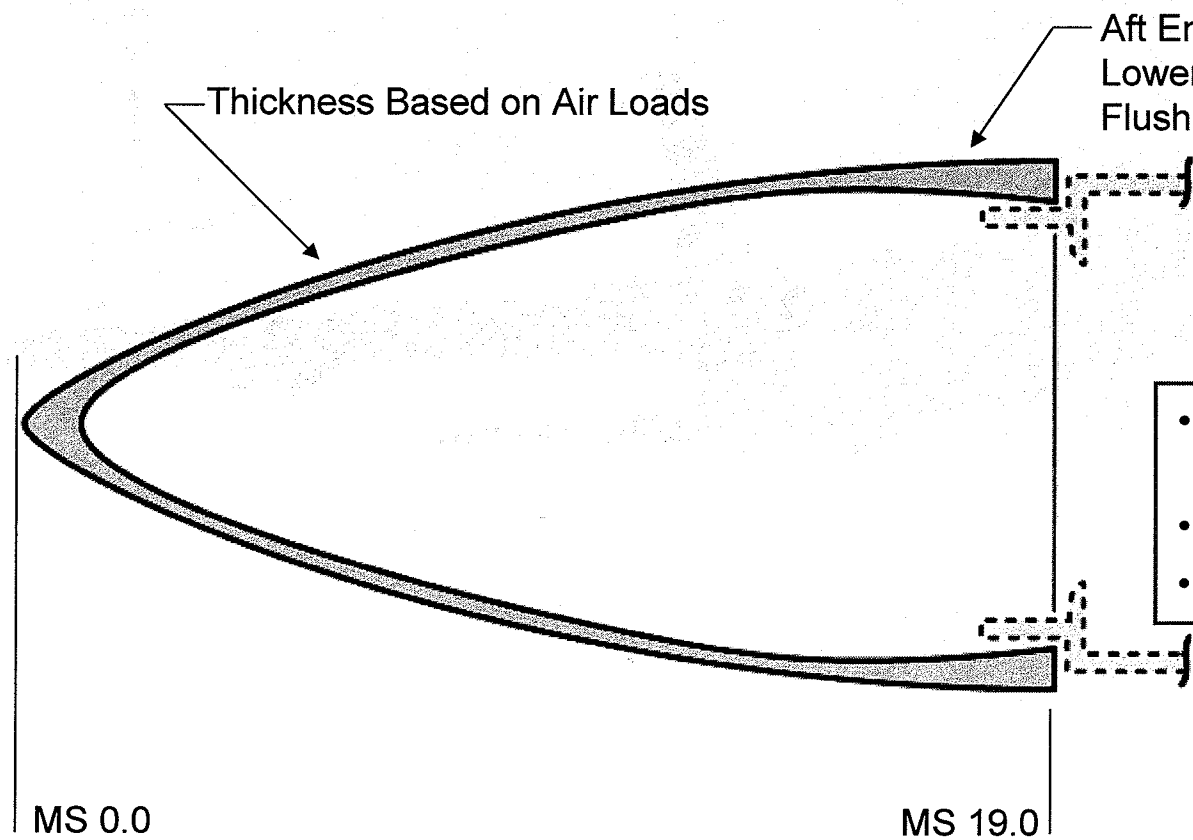
Wing Construction

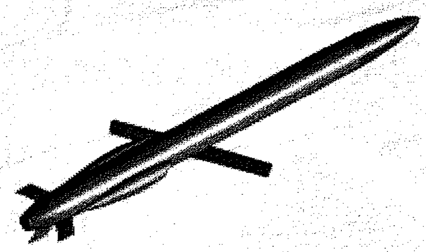
- Resin Transfer Molding Process Will Incorporate Low Band Dipole Antenna
- Materials
  - Glass/epoxy Skins
  - Foam Core
  - Steel Pivot Insert



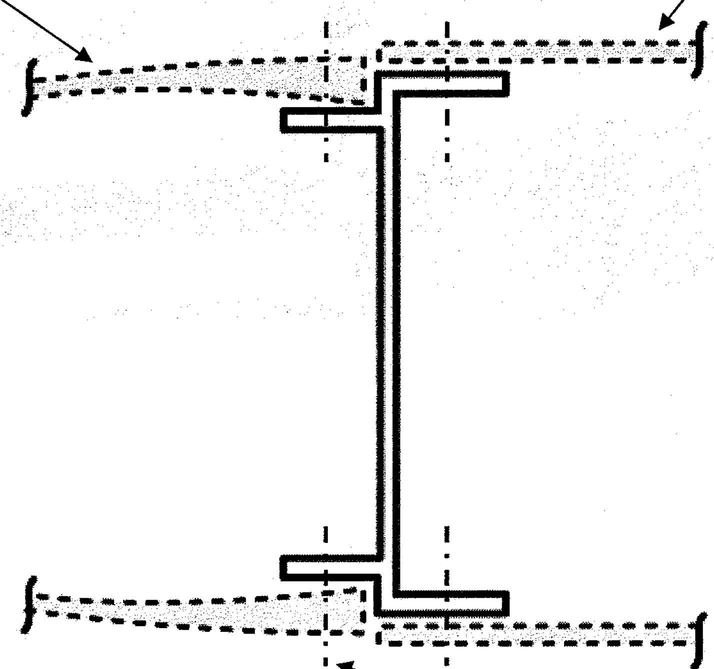
Nose Cone Construction



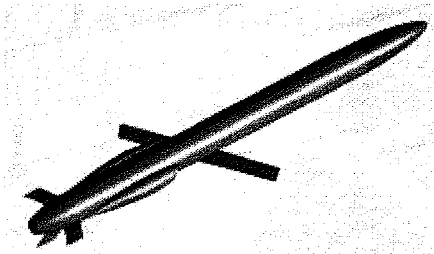
- No Re-entrant IML for Minimal Tooling
- MATL - Glass Filled Ultem
- Process - Injection Molding



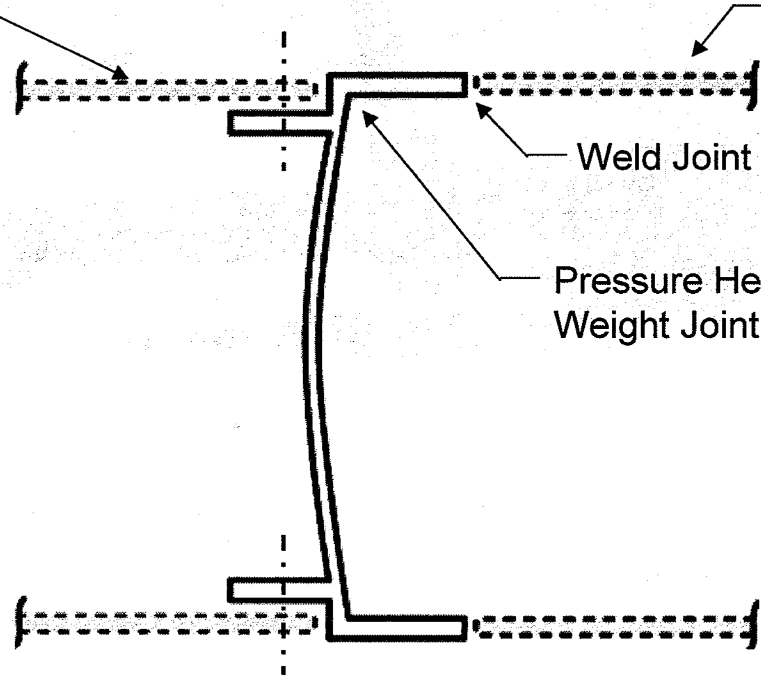
Payload Bulkhead



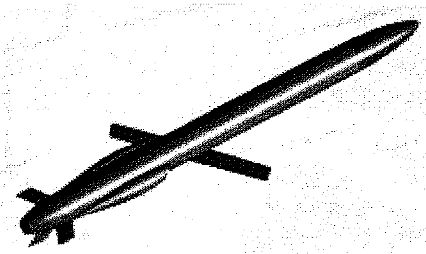
- MATL - Aluminum
- Process - High Speed Machining



Midbody Forward Bulkhead

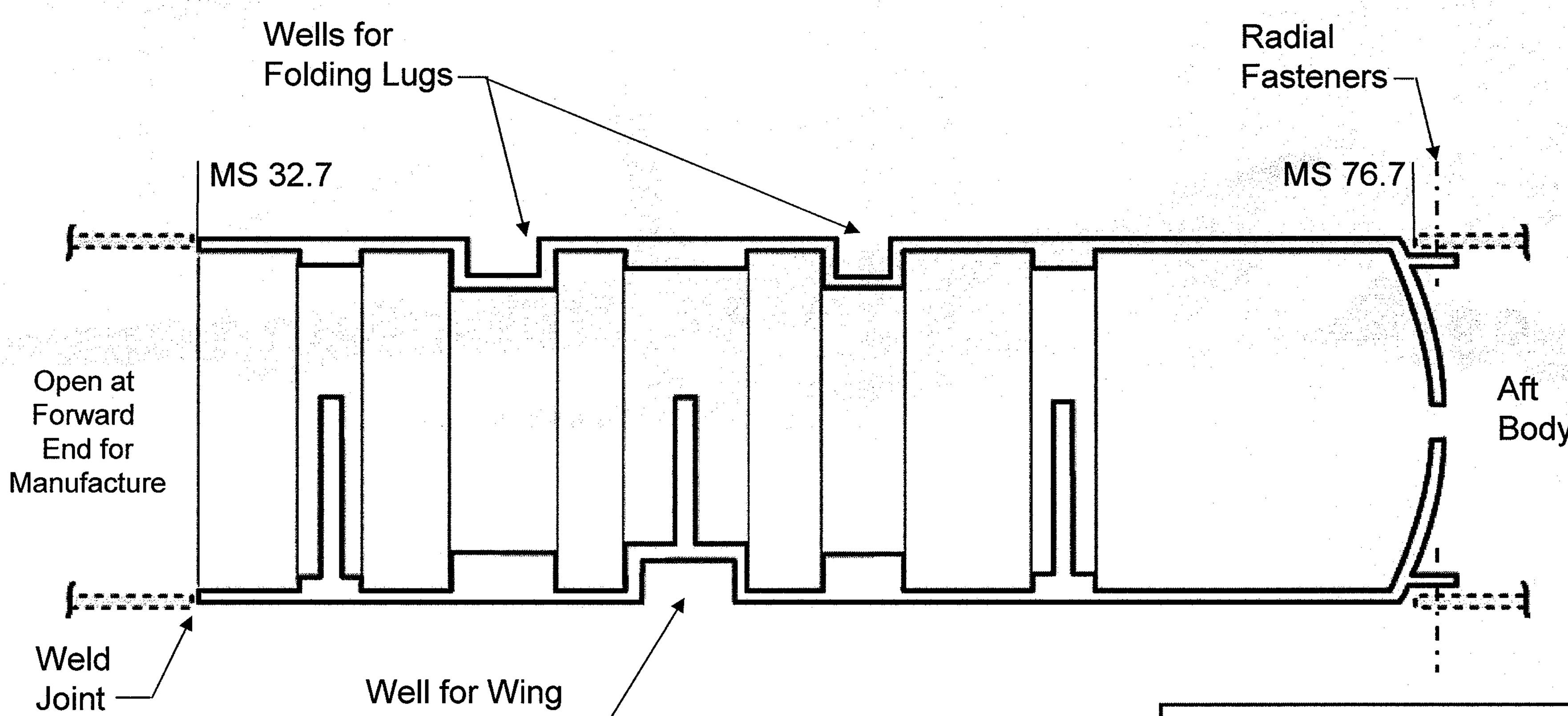


- MATL - Aluminum
- Process - Casting

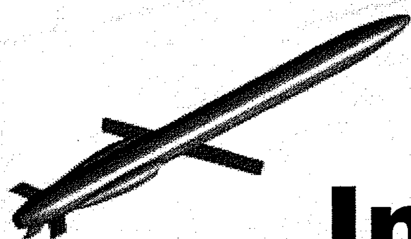


BOEING

MALD Midbody

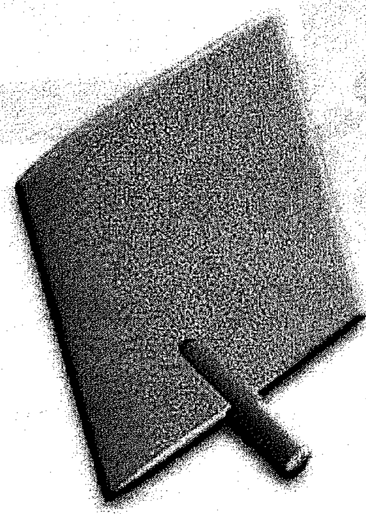


- MATL - Aluminum
- Process - Casting

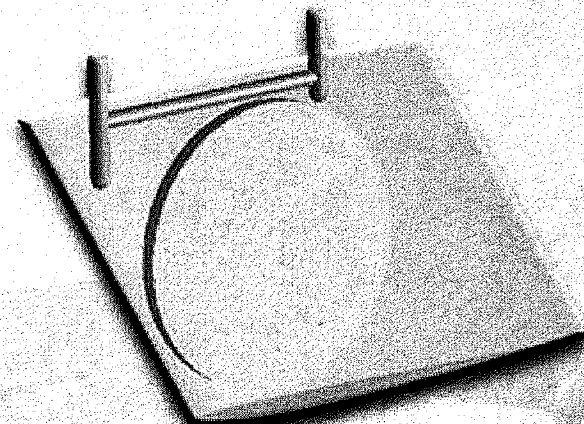


Inserted Components

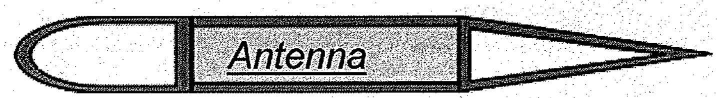
Folding Lugs
Machined Steel

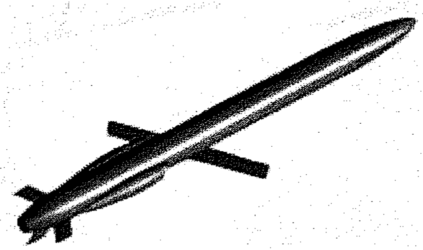


Horizontal Fins (2)
Glass Fiber Filled Ultem
With Root Insert



Vertical Fin
Glass/Epoxy Skins and Foam Core
With Antenna and Root Insert





Air Vehicle

- Preferred Concept Design
- Preferred Concept Performance
- Manufacturing Approach
- Risk Mitigation

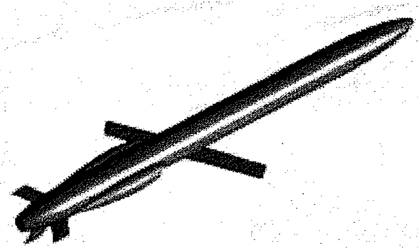
Air Vehicle Risk Items

- 1E: Design May Not Be Flexible Enough to Meet Requirement Creep
- 1F: Design May Not Be Flexible Enough to Incorporate the Jammer Requirement

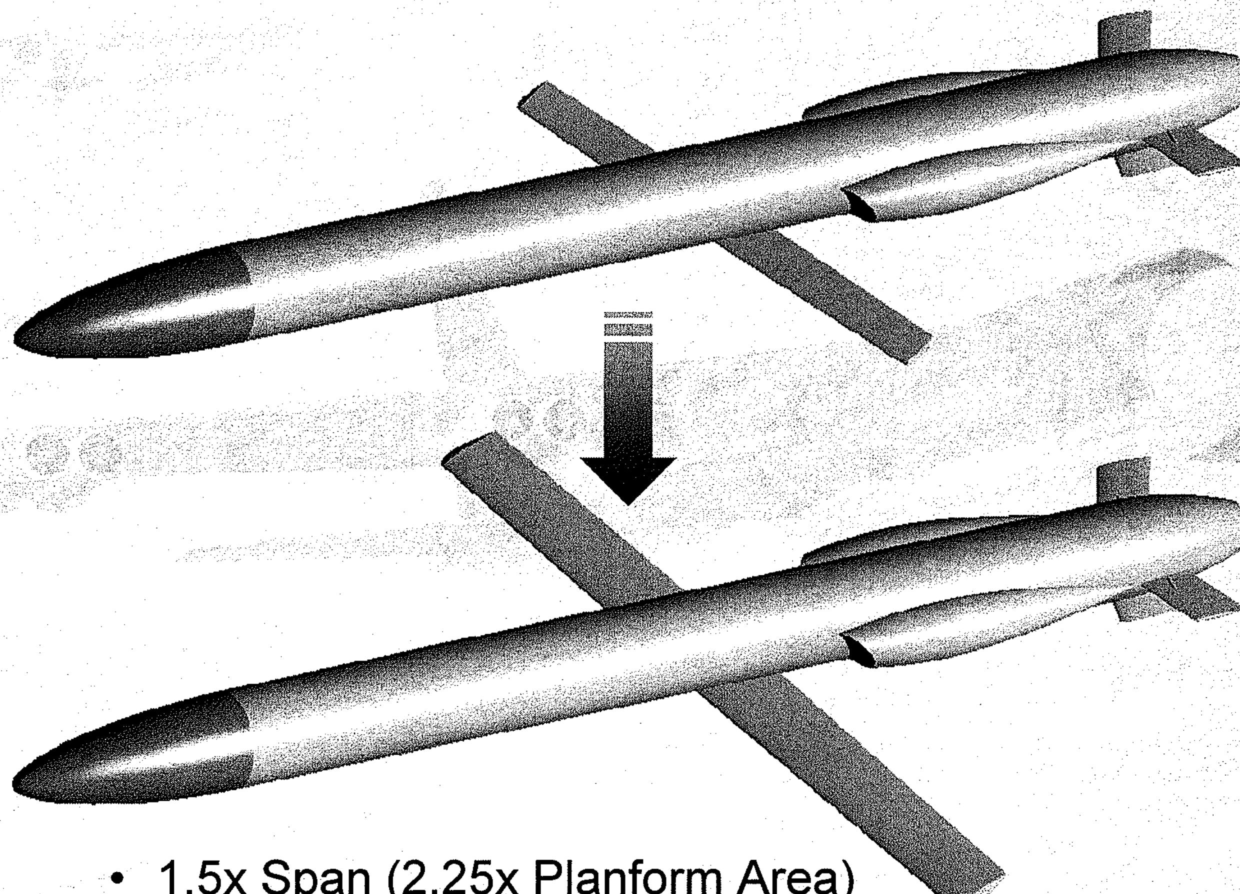
Spiral Growth Options

- Growth Volume Behind Nose
  - 235 in^3 (Excluding Start-up Battery*)
- Enlarge Wing
  - At Least 2x Current Planform Area
- Electric Wing Actuator
  - Continuously Vary Sweep Angle to Optimize for Endurance

* >50 in^3 Available Between Inlet Ducts to Relocate Start-up Battery (19 in^3)

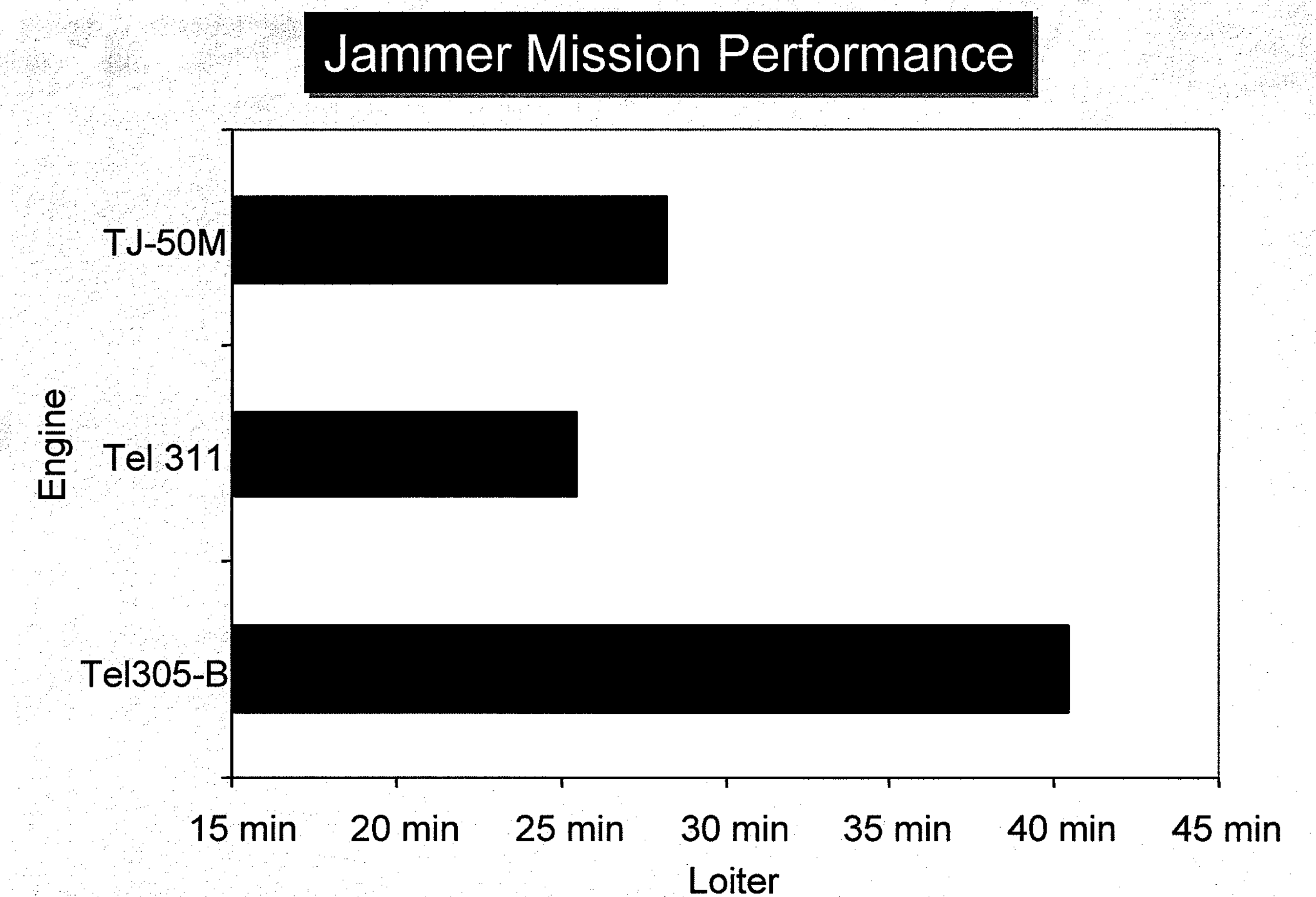


Enlarged Wing



- 1.5x Span (2.25x Planform Area)
- Increases Low Speed Loiter Endurance
- Decreases Maximum Operating Speed

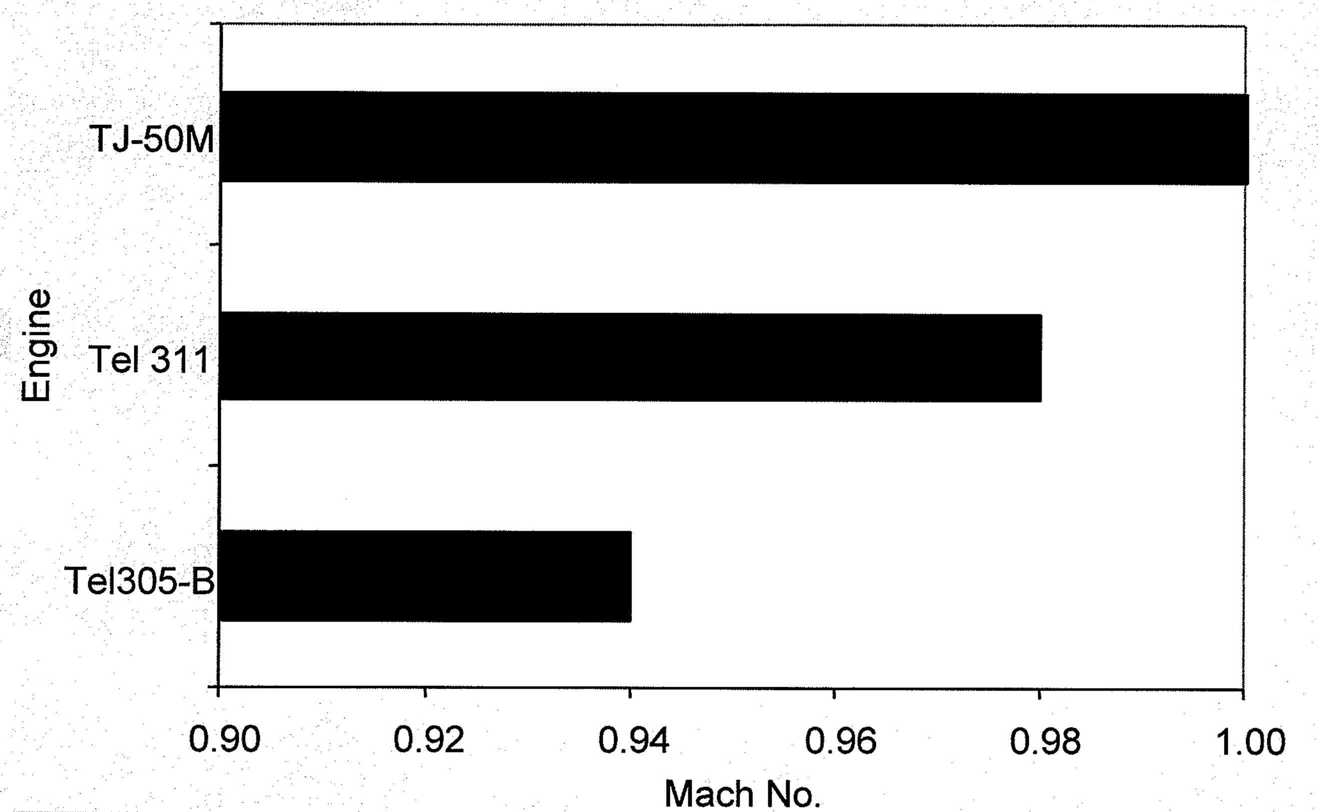
Enlarged Wing (cont.)



Tel305-B has enlarged wing

Enlarged Wing (cont.)

Maximum Operating Airspeed at 40,000 ft



Tel305-B now operates at 40 kft